# PURCHASING

July, 1944

ROY C. HABERKERN

Program Chairman
of the 1944

Purchasing Conference
reported in this issue

JULY, 1944

NEW LOW-COST PROTECTION AGAINST

Ret This 3c-page bookler house during a vigous can make your present during, but to years to come.

RUST

PREVENTION

To protect millions of dollars worth of machinery, precision tools, and materials that may stand idle pending reconversion, The Texas Company makes available its latest development in rust inhibitors . . . Texaco Rustproof Compound.

Texaco Rustproof Compound provides a penetrating, self-sealing film that is not only waterproof but highly resistant to chemicals and fumes.

In many cases, costly chipping of existing rust and scale is eliminated because *Texaco Rustproof Compound* does not dry out, but remains soft, healing over any scratches and abrasions. It is much more economical—coat for coat—than paint.

Texaco Rustproof Compound has proven highly successful on leading railroacs which have used millions of pounds for protection against the weather, salt brine drippings, flue gases, etc.

Write for free booklet entitled "Rust Prevention." It tells how Texaco Rustproof prevents rust, where and how to apply it and why it is so successful. Every industrial executive and engineer should have a copy. A single suggestion in this booklet may save thousands of dollars.

The Texas Company, 135 East 42nd Street, New York 17, N. Y.

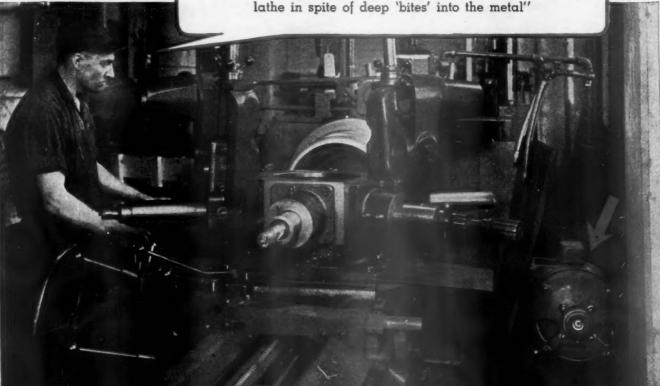


TEXACO Rustproof Compound

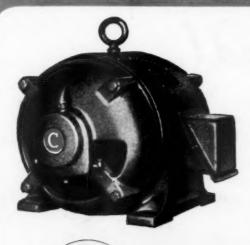
TUNE IN THE TEXACO STAR THEATRE EVERY SUNDAY NIGHT-CBS

HELP WIN THE WAR BY RETURNING EMPTY DRUMS PROMPTLY

"No grunts and groans from the Century motor on this lathe in spite of deep 'bites' into the metal"



## CENTURY FORM J MOTORS Provide Extra Protection Against Falling Solids and Dripping Liquids





ROMPTLY

The Century Form J Squirrel Cage motor is ideal for machine tool applications such as the lathe shown above.

The 10 horsepower Century motor on this job furnishes adequate power for the deep rough cuts and the unusual freedom from vibration also contributes greatly to precision operations, when they are performed.

In addition, this Form J Squirrel Cage motor, which has the upper half of the frame closed, gives protection from the hazards of falling solids and dripping liquids.

Adequate ventilation to compensate for the partial inclosure, is provided by two powerful fans to force a blast of cooling air around the bearings and ventilating passages surrounding the windings.

Get complete information on the advantages of Century Form I motors—and the complete Century line, from 1/6 to 600 horsepower. The wide experience of the Century field engineer may prove valuable to you. He'll be pleased to help you with your problems, whether for today's production or your postwar plans.

CENTURY ELECTRIC COMPANY, 1806 Pine Street, St. Louis 3, Missouri

Offices and Stock Points in Principal Cities



Happiness Ahead!

There's a great day coming...if and when the war is won...a day when once again you'll be able to go adventuring on long motor trips, a day of greater abundance, better homes, and of hosts of new things that will make

It's a day worth saving for by buying as many war bonds as you can. And it's a day that may never come unless we all do buy our full share of war bonds. life more worth living.

SUPPORT THE 5th WAR LOAN Buy An Extra War Bond Today!

INLAND STEEL COMPANY Chicago 3, Illinois

## Piano Wire plays a different tune



INSIDE a standard size piano there are more than 200 strings. Each note on the keyboard requires one, two or three steel springs.

To help assure beauty of tone, this high-carbon steel piano wire must be exceedingly uniform in thickness and roundness, tolerances are held to .0003". It must be perfectly straight. Because it is installed and kept under high tension, it must have high tensile strength. The physical and chemical characteristics must be closely controlled in every step of manufacture to assure the greatest degree of uniformity

obtainable. These are some of the reasons why it took the best kind of wire made to answer the exacting demands of piano making craftsmen. The kind Worcester Wire Works has been drawing for nearly half a century.

Today, "piano wire" plays a different tune, as it adds to the ever increasing roar of destruction that spells final doom for the Axis.

Some of the wire from Worcester Wire Works that went into pianos is now used for safety clips—an important part of hand grenades; some of it is formed into springs for air-

craft precision instruments for the spring mechanisms that eject shell magazines—for flexible shafting—for hundreds of vital war applications requiring uniform high-quality wire to provide dependable performance wherever it is used.

If you believe your product can be improved by a better round steel wire, or if you think you can improve your methods of using it, consult Worcester Wire Works' research and engineering staff. Their long experience may prove most helpful.



Divisions of National-Standard Company

WORCESTER WIRE WORKS

nd

Worcester, Mass.

ROUND STEEL WIRE, SMALL SIZES

TEEL WIRE,

NATIONAL-STANDARD

Niles, Mich.
TIRE WIRE, FABRICATED
BRAIDS AND TAPE

ATHENIA STEEL

Clifton, N. J.
COLD ROLLED, HIGH CARBON
SPRING STEEL

(O.: <

WAGNER LITHO MACHINERY

Hoboken, N. J.
LITHOGRAPHING AND SPECIAL
MACHINERY

BACK THE ATTACK-BUY MORE WAR BONDS

PURCHASING, published monthly by Conover-Mast Company. Publication Office, Orange, Conn. Editorial and Executive Offices, 205 East 42nd St., New York 17, N. Y. Entered as second-class matter August 8, 1942, at the Post Office in Orange, Conn., under the act of March 3, 1879. Subscription, \$3 for one year, \$5 for two years in the U. S. A. Canada and Foreign \$4.00. Volume XVII. No. 1.



#### INTEREST BEFORE DIVIDENDS

Before a better mouse-trap can draw the world to its maker's door, many conditions must be met.

At the very beginning, the mouse-trap maker must have broad practical experience in order to develop a truly better product. Then a body of workers must be trained to maintain production in volume to equal demand. And finally—but of first importance—the interest of those workers in producing only quality mouse-traps must be encouraged.

Here at Thermoid, that employee interest in work well done receives constant stimulus from honor awards like the "Progress Medal" pictured above. From department heads to messenger girls, every Thermoid worker knows that sufficiently improved effort brings both official recognition and the applause of associates.

More important still, these honors emphasize the fact that protection of Thermoid's leadership depends upon the individual employee; and that the worker's own welfare rests directly upon continuance of that Thermoid prestige in the minds of customers and users of Thermoid Products.

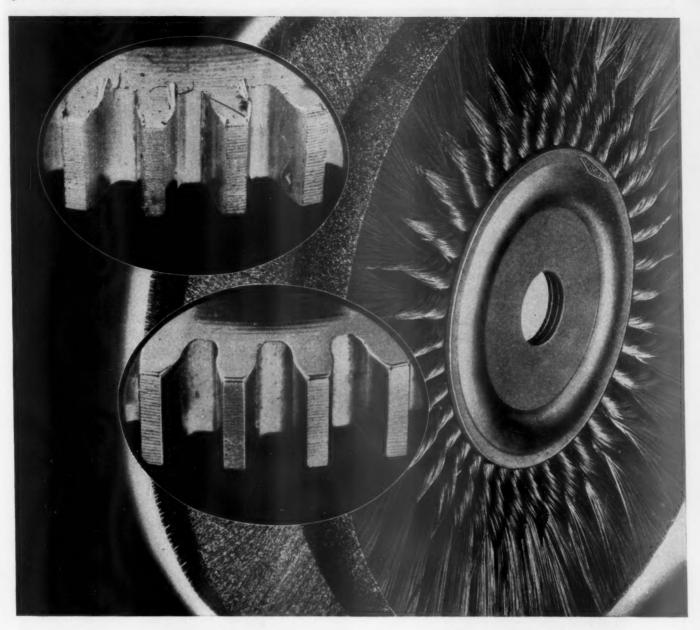
This "mind to work" which marks the Thermoid family is among our most valued assets. It is largely responsible for the quality products, prompt customer attention and other things that cause folks to say: "It's good business to do business with Thermoid."

THE THERMOID LINES INCLUDE: TRANSMISSION BELTING • F. H. P. AND MULTIPLE V-BELTS AND DRIVES • CONVEYOR BELTING • ELEVATOR BELTING • REPEATOR BELTING • WRAPPED AND MOLDED HOSE • SHEET PACKINGS • INDUSTRIAL BRAKE LININGS AND FRICTION PRODUCTS • MOLDED HARD RUBBER AND PLASTIC PRODUCTS.



DIVISION OF THERMOID COMPANY TRENTON, NEW JERSEY

"It's Good Business to do Business with Thermoid



## Toothbrush for Gears

GEARS should have their teeth brushed to remove the jagged burrs and metallic fuzz that could ruin delicate moving parts.

Here is the brush that does it—in ONE OPERATION. Other methods of cleaning gear teeth require two or more operations and so take longer to do a less effective job.

The lower photograph shows the result of brushcleaning a gear's teeth. It cannot show, however, the vastly important saving in time and cost, and the increased production that use of the *right* brush made possible. You can get results like these on any cleaning, burring or finishing job.

There's an Osborn Brushing Specialist in your district who devotes his whole time to helping speed-up production...improve product...reduce cost. There is no charge for this service. Ask us for it today.

THE DSBORN MANUFACTURING COMPANY
5401 Hamilton Avenue Cleveland, Obio





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## MACKILD

Macklin segments are available for all types of segmental chucks. They are tops for surface grinding.

MACKLIN HIGH QUALITY WHEELS FOR EVERY GRINDING PURPOSE WILL

"Protect Your Production"

Ask for the services of a Macklin Field Engineer

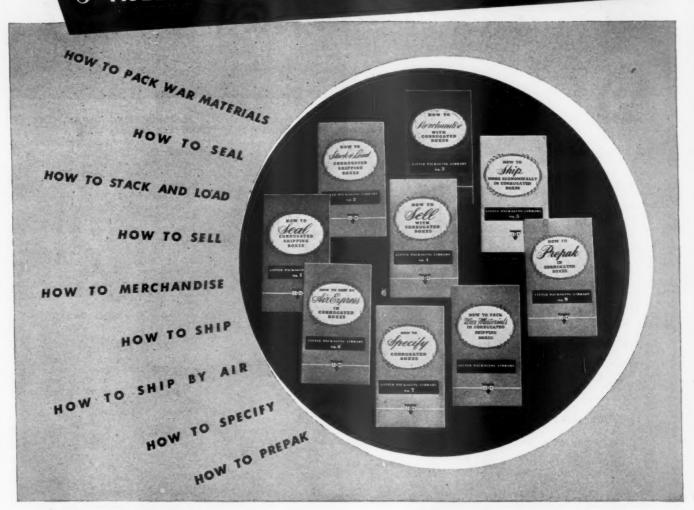
## MACKLIN COMPANY

Manufacturers of GRINDING WHEELS — JACKSON, MICHIGAN, U.S.A.

Distributors in all principal cities

Sales Offices: — Chicago - New York - Detroit - Pittsburgh - Cleveland - Cincinnati - Milwaukee - Philadelphia

## 9 WAYS TO BETTER POST-WAR PACKAGING



#### H & D Little Packaging Library—FREE on Request

Packaging war goods — that's the all-important task of H & D today, BUT H & D's war-time activities are bringing a wealth of valuable experiences, and an abundance of new packaging skills and techniques that will have a great and good effect on the progress of post-Victory packaging.

With packaging trends constantly changing and packaging materials under continuous development, H & D published its Little Packaging Library to make your entire packaging procedure more efficient. The "Library" presents the packaging experience of hundreds of manufacturers and contains many real contributions to im-

proved packaging and shipping methods to savings in materials, manpower, machinery and transportation facilities.

Whatever your packaging assignments are today — whatever they will be tomorrow, these booklets will prove of value to you and your organization. The booklets are FREE without obligation — write for as many sets as you need. Address Hinde & Dauch, 4423 Decatur Street, Sandusky, Ohio.

FACTORIES: in Baltimore • Boston • Buffalo • Chicago Cleveland • Detroit • Gloucester, N. J. • Hoboken Kansas City • Lenoir, N. C. • Montreal • Richmond St. Louis • Sandusky, Ohio • Toronto

For postwar packaging.. better see



# "Know-How" Information THE COUPON HELOW FOR YOUR PLANT

☐ 1. GAUGE STOCK — New folder describes Jessop Precision Gauge stock which is said to be ideally suited for applications requiring the use of two flat parallel surfaces. It is furnished finish ground on all dimensions to a thickness tolerance of plus or minus .001", and is available in wide range of sizes from 1/64" to 1" thickness, in standard 18" lengths. Each piece is individually oiled and packed in envelope. Jessop Steel Co.

2. ELECTRONIC RELAY—Bulletin GEA 4214 describes electronic relay which provides floatless control of levels of many liquids, permits pressureless switching; used for sorting small parts, or maintaining constant temperature baths. It eliminates arcing and sticking of delicate contacts. General Electric Co.

☐ 3. REPAIRING CUTTING TOOLS—Bulletin No. 14 tells "How to Repair Broken Cutting Tools With Easy-Flo" low temperature silver brazing alloy. It is termed an instruction booklet on tool repairing, and is well illustrated. Handy & Harman.

□ 4. INJECTION MOLDING MACHINE—Bulletin 622-A describes operating features of new 2 oz. and 4 oz. vertical injection molding machines for fast, precision molding of thermo-plastic materials into small parts. Machines are said to be adapted for molding operations requiring inserts or long leads in the finished parts. Also, they are adaptable for molding thermosetting materials. The Watson-Stillman Co.

☐ 5. PATTERNS — MODELS — Manual of pattern and model making, giving a step-by-step pictorial description of how gyp-sum cements are used in the production of patterns and models for the air-craft and metal industries, has just been released by the United States Gypsum Company. The

characteristics of gypsum cements and the five basic methods of their use are shown and explained in detail.

☐ 6. MILLING CUTTERS — New bulletin covers complete line of carbide tipped plain and side milling cutters made by the Super Tool Co. It contains complete details, specifications and other data on general purpose cutters for milling in cast iron, non-ferrous and other materials, and cutters designed especially for carbide tipped milling in steel.

☐ 7. VENTILATION—Eight new pieces of literature which together illustrate and describe approximately 50% of the line of ventilating equipment made by the Allen Corp., are said to have been designed and written to provide a practical, down-to-earth treatment of ventilation problems and to offer solutions to these problems based on the experience of men who have spent years in the field of ventilating engineering. Three of the pieces describe 3 types of turbine ventilators.

☐ 8. PLASTICS — Recommended reading on plastics, the Boonton Molding Company's "Ready Reference for Plastics" is easy to read, and will give you a clear understanding of the phenolics and ureas and various thermoplastics.

ORDNANCE WRAPS — Samples — Conform to Federal Specifications AXS-840 Revision 1. Greaseproof, Moistureproof, Waterproof, Laminated. Nashua Gummed and Coated Paper Co.

□ 10. OFFICE FURNITURE—Catalog No. 50 issued by Hoosier Desk Co. illustrates interesting office suites, and a series of standard office equipment and accessories.

☐ 11. PURCHASING DEPARTMENT RECORDS and Routines—This is a 64-page book which explains and illustrates systems and alternate methods for Purchasing Departments from initiating the purchase to the filing system. Remington-Rand Inc.

☐ 12. COPPER PLATING—Informative 6-page booklet describes the Unichrome Alkaline Copper Plating Process which is said to produce lustrous deposits at high speed in a non-cyanide solution. Process utilizes low operating temperature—100 deg. F to 140 deg. F. Exceptional smoothness of the deposit provides an excellent base for bright nickel plating without polishing or buffing. United Chromium, Inc.

☐ 13. CLEANING SUMP TANKS—Bulletin 130 describes the Spencer Sump-Vac which it is claimed cleans sump tanks in 2 to 10 minutes; capacity 125 gallons; rate of pick-up is 40 gallons of liquid per minute. Filter basket collects chips and heavy sludge. Float valve prevents overfilling. Unit is portable. The Spencer Turbine Co.

☐ 14. GAS EXHAUSTERS AND BOOSTERS — Sixteen-page bulletin, 32-33-B-12 describes and illustrates positive displacement exhausters and boosters for handling all kinds of gases for many varied services, under either pressure or suction. Bulletin is profusely illustrated. Roots-Connerville Blower Corp.

☐ 15. CUTTING TOOLS — New, revised pamphlet, entitled "Stellite Star J-Metal Cutting Tools," has just been released by the Haynes Stellite Co. It is stated that tools can be economically used for machining practically all types of machinable materials except chilled iron and manganese steel. This is enlarged edition of previous folder and includes data on Star J-Metal round tools, as well as on standard square, rectangular, and tipped tools, along with information on milling cutter blades, tool holders and adapters. Haynes Stellite Co.

☐ 16. FOUNDRY SHAKEOUTS—New bulletin describes Floatex full-floating foundry shakeouts, multiple unit shakeouts, self-discharging shakeouts and portable shakeouts. Among the illustrations is that of unit weighing 120,000 lbs. with 100 tons capacity. Foundation is said to be unnecessary for the portable models. Robins Conveyors Inc.

☐ 17. TOOL STEEL for the Non-Metallurgist. This is another recommended listing for it gives the non-metallurgist an easily grasped understanding of the different types of tool steels, and outlines the purposes for which each is best adapted. Crucible Steel Co. of America.

(Continued on page 12)

PURCHASING  Please send me the "  1	205 EAST 42ND ST., NEW YORK 17, N. Y.  Know-How" Information checked.  5   6   7   8   9   10    15   16   17
NAME	STATE

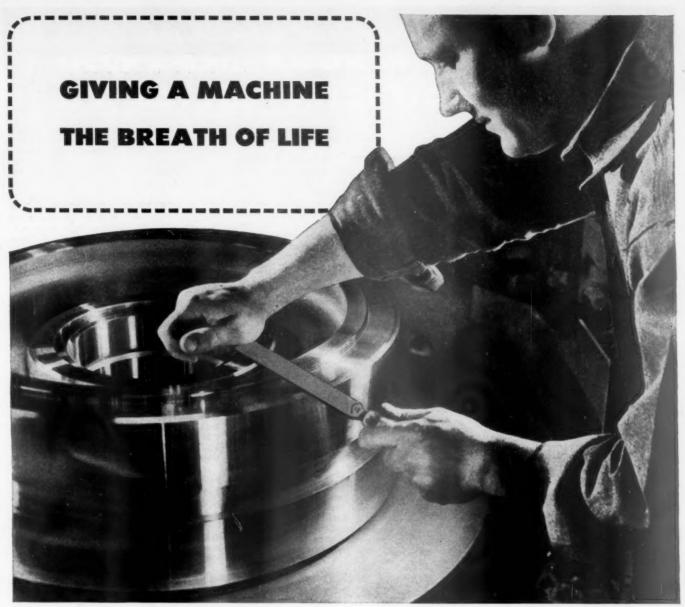


Photo courtesy Fawick Airflex Co.

HERE you see the spider of a reverse gear unit getting a fine finish while being rotated on a vertical milling machine. It is one of the many cases where only the combination of trained mind, skilled hands and the right file can provide the final touch that means good performance.

No single type of tool has yet been discovered which can be applied with greater versatility toward "making things work" than files. Their production constitutes an "industrial art" which can well be a tool manufacturer's sole business.

For smooth-filing, there are special

Nicholson Files for aluminum, brass, plastics, die castings, soft-metal forming dies, lathe-rotated parts, and for other special applications or materials; and X.F. Swiss Pattern files in almost innumerable shapes and sizes for finishing and assembling small machine and instrument parts of steel, silver and other metals.

For 80 years, Nicholson has been making files and nothing else. Much of today's improved file-cutting machinery is Nicholson-designed. Nicholson devotes its field studies wholly to the application

of files—in industrial production, in sharpening tools and implements, in working different kinds of metals, alloys and other materials.

When seeking files for specific purposes, you can be sure that in Nicholson or Black Diamond brands you can obtain exactly The right file for the job—under the quality guarantee of Twelve perfect files in every dozen.

FREE BOOK, "File Filosophy," is an interesting, illustrated "handbook" on file manufacture, kinds, use and care—helpful to production and purchasing heads, foremen, key mechanics.

NICHOLSON FILE COMPANY

28 ACORN STREET • PROVIDENCE 1, RHODE ISLAND, U. S. A. (Also Canadian Plant, Port Hope, Ont.)

NICHOLSON FILES FOR EVERY PURPOSE

## "Know-How" Information, Continued USE COUPON ON EACH PAGE

☐ 18. TAPPING MACHINE — Six-page folder (LTM-44) describes improved light duty tapping machine, announced by Detroit Tap & Tool Co. The unit has been designed for precision tapping in production. Standard spindle speeds 64, 160, and 400 rpm; maximum clearance from tap holder to top of work able 19"; machine's capacity is rated up to a maximum of 7%" dia. and 14 pitch in mild steel.

19. CONSTANT LEVEL OILERS—Bulletins 24-A and 25-A describe an automatically controlled visible ciling method for ring or ball bearings, shafts, gear and pump housings, etc. They also contain suggestions on how to end bearing failures, reduce motor burnouts, eliminate fire and accident hazards. Trico Fuse Mfg. Co.

☐ 20. GRINDING—Mounted wheels and mounted points with detachable spindles are illustrated in bulletin issued by The Sterling Grinding Wheel Divn. The wheels and shapes are available in vitrified and resinoid bonds, ready for use with precision or portable equipment.

☐ 21. FINISH CONTROL—Spencer Binocular Microscope for Finish control is described in bulletin issued by George Scherr Co., Inc., which also tells about small bore inspection telescope, and universal microscope lamp.

☐ 22. CARBON & RIBBON Catalog—New catalog termed a "Time Saver" is announced by Carter's Ink Co., "with just enough text to enable you to decide what brand to order".

☐ 23. COOLANT BACTERIA—Special report tells how to combat bacteria growth in oil-water cutting solutions used in various machining, cutting, grinding and other operations, to avoid dermatitis infection on the hands and bodies of operators. Report also contains sanitation suggestions for plant cleanliness and individual hygiene, in connection with the handling of oil-water coolant solutions. Oakite Products, Inc.

☐ 24. MAILING EQUIPMENT — Small circular describes metered mailing machines and postal scales, stamp affixers, letter openers and sealers of the National Postal Meter Co.

☐ 25. MATERIALS HANDLING—Profusely illustrated broadside (Bulletin 139) illustrates elevators, lifters, stackers, piling and tiering machines—one that reaches to a height of 49 feet, made by the Revolvator Co. It may give you an idea on how to solve some materials handling problem.

☐ 26. DESICCANT — Bulletin describes Florite Desiccant for drying gases and liquids. It absorbs water instantly but is insoluble and will not swell, sluff down, or disintegrate in water, or appear wet at the end of the absorption part of a cycle. It is marketed in a variety of particle size classifications. It is also available in coarse and powdered grades. Samples available without cost. If you want sample, please so indicate. Floridin Co.

☐ 27. IN-PLANT FEEDING—"Blue Prints" for solving problems of decentralized food servicing in industrial war plants, present practical means for transporting foods to points distant from kitchen and serving them hot to workers. Vacuum Can Co.

28. MEASURING MICRO-INCHES — "How to Measure in Micro Inches" is the title of an interesting booklet issued by Continental Machines, which in addition to describing The Mobile Gage Laboratory— (a complete inspection unit,) tells about gage blocks, inspection gages, care of gage blocks, optical flats, precision surface plates and the Doall comparitor gage.

☐ 29. TRANSFORMERS—Safety and savings with Pyranol all-purpose transformers that "cannot burn or contribute to a fire" are set forth in GEA bulletin 4193. They can be installed in out-of-the-way places to save valuable production space or put next to the load. Installation is said to be fast and easy, and maintenance is at a very minimum.

□ 30. ADDING MACHINE — Completely electrified portable adding machine available in as high as 11 column capacity, which features a simplified arrangement of only 10 numeral keys, is described in new bulletin. It contains non-add key for printing check, page or car number, etc. which are printed but not added to the totals; has electric correction bar, has direct subtraction key, and other unique features. Remington-Rand, Inc.

☐ 31. HYDRAULIC PRESS—General purpose hydraulic press for plastics, rubber, compreg wood and other production work is described in GPP bulletin No. L-1. The press is available in four sizes up to 30" x 30", with or without hot plates. Presses are said to be ideally suited for production jobs and for laboratory work. Presses will accommodate any number of hot plates, steam or electrically heated. Charles E. Francis Co.

□ 32. CONVEYOR - ELEVATOR — Rex-Uni-Flo is a new method for the mass handling of free-flowing bulk materials, described in New Chain Belt Co. Bulletin, No. 442. It is of the continuous stream type, and is composed of chain belt equipped closely-spaced scraper carrier flight which operates in enclosed casing. System has positive discharge mechanism that removes all material. It is completely self feeding. It can convey material horizontally, vertically or at any angle, and is clean and dust-free.

☐ 33. POSITIONER—Metro positioner for mounting vise, fixture or for use as angle plate is described in new bulletin. Unit is for mounting work rigidly at any angle. It can be used for checking, milling, drilling, shaping, grinding, welding, pattern making, etc. It is available in three standard sizes, with following size tables: 2¼" x 2½", 4" x 6", and 8" x 11". Metro-Vise Co.

☐ 34. PANEL BOARDS — New bulletin PB2 describes tumbler switch and fuse type lighting panelboards and dead front distribution panel boards. It is amply illustrated with photographs and wiring diagrams. Bulletin contains data on box sizes, special features, etc. Kolton Electric Mfg. Co.

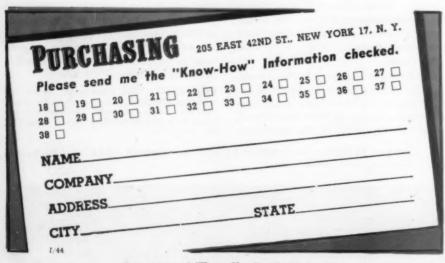
☐ 35. HOOK CHECKER to enable operators to check whether or not thread milling cutters, gear hobs, etc., when sharpening, have been ground to the correct angle of hook or rake, and flue spacing, is described in 8-page bulletin in four colors. Detroit Tap & Tool Co.

☐ 36. PUMPS—Catalog describes Aurora Turbine-type and Centrifugal pumps, nonclog pumps, mixed flow pumps, sump pumps, deep well turbine pumps and jet water systems, and condensation return units. Aurora Pump Co.

☐ 37. WIRE-MARKING Machine—Bulletin describes new multiple wire marking machine which handles four wires at once with a speed of 6,000 feet per hour per wire. Wire may be fed from reel or in short length 2" or more. Imprints 6", 3", or 2"—center to center. Unit is equally effective on lacquered braid or on vinylite or koroseal coverings. Machine for printing on two sides of a wire is also available. Markem Machine Co.

☐ 38. RECORDING & CONTROL INSTRU-MENTS—Bristol Co. has for distribution, a brief index bulletin which gives a complete, illustrated listing of the company's automatic control and recording instruments. This is handy reference sheet for P.A.s.

(Continued on page 14)





MACHINE - POWER

Radial Drill
Drills to center of 62" circle.
Spindle speeds 160 to 8200
R.P.M.

American industry has about reached the "bottom of the barrel" for man-power. Any required increase in production, therefore,

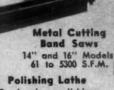
Cut-Off Machine

rels 211/2"

must come from improved efficiency of present workers and their machines.

Alert manufacturing executives have substantially increased production with marked savings in power, capital investment and operating cost—by using fast, streamlined Walker-Turner Machine Tools on hundreds of jobs where heavier and slower equipment had been employed formerly. A few of these "speeder-uppers" are shown on this page. Send for Catalog.

WALKER - TURNER COMPANY, INC. Plainfield, N. J.

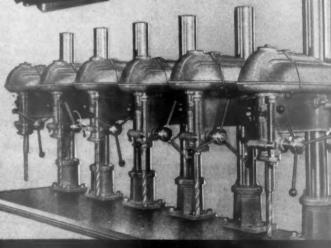


For burring, polishing and hand-lapping.

Multi Spindle Drill Press 15" and 20" models, hand or power feed.

15" and 20" Drill Presses

260 to 5200 R.P.M. Hand or





MACHINE TOOLS

DRILL PRESSES — HAND AND POWER FEED. • RADIAL DRILLS
METAL-CUTTING BAND SAWS • POLISHING LATHES • FLEXIBLE SHAFT MACHINES
RADIAL CUT-OFF MACHINES FOR METAL • MOTORS • BELT & DISC SURFACERS

## "Know-How" Information, Continued USE COUPON ON EACH PAGE

☐ 39. INDUSTRIAL CLOTHING — Catalog section illustrates and describes line of industrial clothing coated with rubber or rubber-like materials, including fire coat, general purpose work coat, double back industrial coat, work pants and jacks, leggings, hats, and aprons covered with a special resin. B. F. Goodrich Co.

☐ 40. LIQUID SCREENS — New 8-page illustrated book No. 1977 on liquid vibrating screens for recovering waste products and reducing pollution is announced by Link-Belt Co. Book contains numerous photographs of actual installations. Originally introduced for removing cuttings, shale and sand from oil well drilling mud, screens are now being used for extracting solids from industrial waste waters, sludge, sewage, oils and other liquids. Link-Belt Co.

☐ 41. COUPLINGS, FITTINGS, ETC. — Catalog No. 17-A covers installation accessories for lubrication, hydraulic, steam, liquid and air applications. Listings include coolant spouts, hose, stems, wing ells and couplings, clips, etc., etc. J. N. Fauver Co. Inc.

□ 42. SYNTHETIC RUBBER — Synthetic rubber data book on synthetic rubber, 70 pages, contains 16 pages of photographs, 20 pages of comparative tables plus numerous charted tests of such effects as freeze resistance, hardness, heat, fuel resistance, aging, etc., and other technical data. Also shown are installation drawings of "Vee" seals, "V" seals, flange seals, cup seals, etc. The book presents the results of laboratory evaluation of compounds made from various synthetic rubber polymers when exposed to various oils, fuels and solvents. Acadia Synthetic Products, Division of Western Felt Works.

☐ 43. WARM AIR HEATERS — Direct fired warm air heaters are described in new 16-page bulletin 509, which deals chiefly with the economy of use and installation of these heaters and their flexibility of application, in variety of industrial installations. Manufacturer states they will burn economically a wide range of fuels. They can be spotted singly throughout a plant or used in multiple units to form a central heating plant. Dravo Corp.

☐ 44. DRAWING INSTRUMENTS — Bruning drawing instruments are described in four-page circular. There are three grades illustrated—professional quality, improved college quality, and college quality. The professional quality instruments are made of brass, nickel-plated and highly polished, and have replaceable needle points. Charles Bruning Co.

☐ 45. INDUSTRIAL X-RAY—Bulletin describes Norelco electronic Searchray, which is said to give all the benefits of X-ray analysis without the expense of leadined rooms. Unit is said to be easy to operate, and to be rayproof and shockproof. Unit can be used for internal examination of ferrous and nonferrous metals, plastics, foodstuffs, canned goods, etc. North American Philips Co., Inc.

As. ZINC PAINT COATINGS — "How Zinc Saves Steel From Rusting" is the title of 24-page booklet on the merits of zinc pigments in metal protective paints for the protection of iron and steel. It discusses zinc dust-zinc oxide paints, zinc dust-zinc oxide-iron oxide paints, zinc oxide-iron oxide, zinc chromate, and zinc tetroxy chromate paints, giving Federal, Army, Navy and Maritime Commission primer and finish paint specifications, and other pertinent information, New Jersey Zinc Co.

□ 47. DEGREASING—Manual on "Vapor Degreasing" which is said to be a book of much valuable practical information for anyone concerned with buying and use of industrial solvents and degreasing, discusses the types of work that can be handled by vapor degreasing, recovery of solvents, toxicity, degreasing of bowlshaped parts, special uses and other problems. Phillips Manufacturing Co.

☐ 48. TOOL CATALOG — New 30-page General Tool Catalog GT-175, which in addition to standard tools, features carbide form tools and "semi-standard" tools, has been issued by Carboloy Company, Inc. Data is also included for such products as masonry drills, diamond impregnated grinding wheel dressers and center grinding cones, Brinell balls, twist drill tips, guide rings, and extruded rod. Two pages are devoted to flat form, dovetail, skiving,

circular, threading, radius forming, and other types of form tools.

Ti

□ 49. SPOT WELDING—Bulletin No. 103 issued by the Progressive Welder Co., describes a new rocker-arm welder designed for making between 500 to 1000 sound spot welds per hour on structural sections of aluminum ranging up to two 1/8" thicknesses of 24-ST. Overall height of the machine is only 60", and the throat opening is adjustable from 71/2" to 171/2".

☐ 50. WOMEN'S WORKWEAR — "Smart Work Clothes, Safety-Styled for Women of Action" is the subject of eight-page bulletin on Victory workwear for women. Clothing is expertly tailored, sanforized, and is said to have the "smooth fit so feminine and flattering to women". Clothing has double-stitched seams and nonsparking buttons. E. R. Moore Co.

☐ 51. WAXES—"Waxes for Today and Tomorrow" is the subject of technical bulletin which lists 36 different kinds of waxes together with their specifications. It affords a ready reference for production men and Purchasing Agents, and should prove quite helpful in view of the shortages of many mineral and vegetable waxes. Distributing & Trading Co.

☐ 52. LUBRICATION—Four catalogs, each treating one of the four new Alemite Systems, are announced by the Alemite Division, Stewart-Warner Corp. The subjects are LubroMeter Centralized Lubrication System, Progressive Lubricating System, Dual Progressive System, and Dual Manifold System of Lubrication. Latter is said to offer a radically new departure in the field of full hydraulic operated centralized lubrication, and is claimed to be well suited to medium and heavy duty machines.

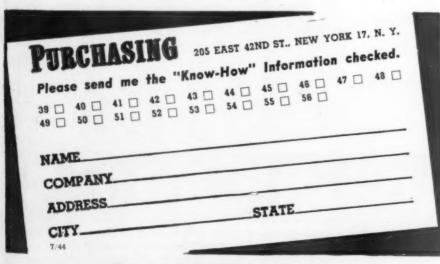
53. AIR CONDITIONING — Information aimed to aid in selecting air conditioning apparatus is given in new 8-page folder issued by Carrier Corporation, on equipment for temperature control, humidity control, air circulation and air cleaning and purifying, refrigerating units, unit heaters, evaporative condensers, and other units for summer or winter air conditioning.

□ 54. NEW ORLEANS RED BOOK—Chamber of Commerce has just released 1944 Red Book, or classified Buyers Guide of the New Orleans market, listing the members of the New Orleans Chamber of Commerce under the products and services they offer.

55. MACHINE SCREWS Etc.—New catalog issued by Progressive Mfg. Co. shows in addition to standard items, several dozen drawings of special fastenings that the company makes. Tables show standard weights of machine screws, stove bolts and nuts in pounds per thousand pieces. Measurement data on standard items are shown in two colors.

☐ **56. SHOP BOXES, ETC.** — Eight-page bulletin describes line of shop boxes, racks, stock carts, machine tool tenders, shelving, work benches, and other shop accessories made by the Aurora Equipment Co.

(Continued on page 16)



## Which of these Wire Ropes Would You Use?

Years ago wire rope was not the highly specialized product it is today, nor was there as much use for wire rope or so many different uses.

Because of the many kinds of equipment using wire rope, plus the many and varied applications of that equipment, many sizes, grades, and constructions of wire rope must be made.

This makes it difficult for wire rope users to select the correct rope.

If the equipment is used in the normal way under average conditions, the manufacturer of the equipment can and does offer suggestions as to the type of rope they believe is best.

But should the equipment be altered to suit special needs, or should conditions not be average, a different wire rope specification is usually necessary for the best service.

#### **Many Factors Considered**

In recommending the correct wire rope for your equipment, several factors need to be considered:

- 1. Safety Factor—This has to do with the amount of loading and whether it is steady or a shock load.
- 2. Bending Fatigue—This has to do with the number and size of sheaves, size of drum, and also speed of rope.
- 3. Abrasion.
- 4. Type of Equipment:
- 5. Use of Equipment.

Conditions of service on a given type of equipment vary so much that it is often helpful to know the type of rope previously used and the service it gave.



Then after a study of this information, wire rope can be recommended that experience proves will give the best service.

Sounds difficult, doesn't it? Really it isn't difficult when you have the advice and counsel of Macwhyte Wire Rope Engineers. Just write to Macwhyte Company, its distributors or mill depots. Tell them the make and model number of your equipment, explain briefly what it is being used for, and mention the size, grade, and construction of the rope you are now using.

Remember — Macwhyte makes the "Correct Wire Rope For Your Equipment." Pictured above are but a few of the types of wire rope made by Macwhyte so that you may have the "Correct Rope For Your Equipment." There is a size, grade, and construction of Macwhyte Wire Rope that will give you low cost, safe service.



The correct rope for your equipment

MACWHYTE Braided Wire Rope Slings

NO. 707



2918 FOURTEENTH AVENUE

KENOSHA, WISCONSIN

Mill Depots: New York • Pittsburgh · Chicago • Fort Worth • Portland • Seattle • San Francisco. Distributors throughout the U.S.A.

MACWHYTE PREformed and MONARCH WHYTE STRAND Wire Rope

Internally Lubricated Wire Rope MACWHYTE Special Traction Elevator Rope MACWHYTE Aircraft Cables and Tie-Rods

MACWHYTE Stainless Steel Wire Rope MACWHYTE Monel Metal Wire Rope

## "Know-How" Information, Continued

#### USE COUPON ON EACH PAGE

57. FILING SORTER-Sort-O-Mat is the name of new sorting aid for correspondence, orders, bills, etc. which is said to enable an untrained person to sort in close alphabetical sequence a minimum of 800 papers an hour. Bulletin describes the principle and unit. Yawman & Erbe

☐ 58. WIRE ROPES — "Industrial Wire Ropes Hand Book" is the title of 96-page, 1944 edition of Broderick & Bascom hand It covers the selection of the right rope for the job, illustrates rope constructions, and gives data on working loads, stresses, sheave and drum sizes, and other information of value to buyer and

☐ 59. CONTRACT SERVICES - Metal -Booklet "Contract Services by Grammes" tells about the metal working services offered by L. F. Grames & Son, from design to drop shipments, and shows in detail equipment available for every phase of metal working and finishing, fabrication and assembling of metal parts.

☐ 60. TAPS—If you buy taps you should have the Threadwell Tap book. It's new. It explains "how to talk about taps," illustrated varied types, explains four classes of fits, and tells "how to choose the right And it contains operating information for the men who use taps, that should be of prime interest to Purchasing Agents. Threadwell Tap & Die Co.

1 61. PICKLING BATHS, Chemical Solutions, Heating and Agitating—Bulletin describes and illustrates Steam Jet agitators for heating and agitating pickling baths and chemical solutions for tank processing. batch type pickling, tube pickling, and for stainless steel pickling baths—muriatic acid pickling or where solutions of chlorides and other metal salts are to be quickly heated or agitated. Heil Engr Co.

62. ELECTRICAL SYMBOLS Chart . Blue-print style chart of electrical symbols for power, control and measurement, both in one line and complete wiring diagrams, is included in Bulletin 4403 published by the I-T-E Circuit Breaker Co. Chart is lacquered to withstand frequent handling. It contains more than 500 symbols and switch sequence tabulations.

☐ 63. OILERS, Gravity Feed — Bulletin 26-B illustrates and describes streamlined oiler with a crystal-clear, re-inforced plastic reservoir that has no aaskets to leak. The dust-proof style has an oil filter that can be removed for easy cleaning in less than five seconds without tools, mess or waste of time. Trico Fuse Míg. Co.

☐ 64. SPRING-LOCK Fastener — Catalog just issued describes Esna spring-lock fastener, newest addition to the self-locking Elastic Stop Nut and other aircraft fittings. Illustrations show parts and assembly and how it operates, accompanied by data used in specifying and buying. Fastener can be furnished in any required metal, under the standard specifications of Elastic Stop Nut Corporation products, or on special order.

65. FLAME CUTTING-"Machine Flame Cutting for Assembly Line Fabrication" is the title of 8-page booklet just released by Air Reduction. The booklet describes assembly line fabrication of frames and other components for generators for Deisel Electric units by oxyacetylene flame cutting, using machines of the multiple torch type. Machines were used for beveling, turning and shaping operations. Accuracy and quality of the parts are said to compare favorably with that of parts formerly produced by machining, and cost is lower. Check No. 65 for copy of booklet ADR 13.

☐ 66. ABRASIVES — New catalog describes new abrasive tool development by Carborundum, namely, MX mounted wheels and sticks. Because of its composition MX is said to be unusually resilient, clean cutting and self cleaning, and to be unusually versatile. The Carborundum Co.

☐ 67. ELECTRIC MELTING — "Electric Melting at New Low Cost" is the title of new 15-page bulletin on the Whiting Corporation's Hydro-Arc Electric Furnace. two-color bulletin covers the application, design, method of operation, and advantages of the electric melting furnace.

68. TENSILE TESTER, Portable-Dillon portable tensile tester is described in detail in eight-page bulletin, which states that the new precision instrument "brings

1 1 10 10 10 10 10

precision tensile testing within reach of every concern." It may be operated by novice or expert. Compression cage and transverse testing fixture are also available. Overall height without floor stand Extra tall models are available. W. C. Dillon Co.

☐ 69. MEASURING Liquids, Gases, etc.— Photoswitch Densitometer Series D90, re-cently introduced photoelectric control for transparency measurement of liquids, gases, films, filters, plastics and similar materials, is described in four-page bulletin. It is said to provide the extreme ac curacy of measurement necessary for in dustrial production control. Photoswitch

70. SAFETY LADDER - Heavy-duty, lightweight folding ladder, styled the "handiest ladder ever built", is described in 4-page folder. It folds together lengthwise to a bundle 3" x 3". Special lock keeps ladder rigid in open position. It is equipped with safety shoes for working on all types of surfaces, according to manufacturer. Duo-Safety Ladder Corp.

71. ELECTRICAL INSTRUMENTS—New catalog, No. 16, 32 pages, illustrates and describes the Norton line of ammeters, voltmeters and wattmeters in three different systems—(1) moving coil, (2) electromagnetic, and (3) electro-dynamometer. Norton Electrical Instrument Co.

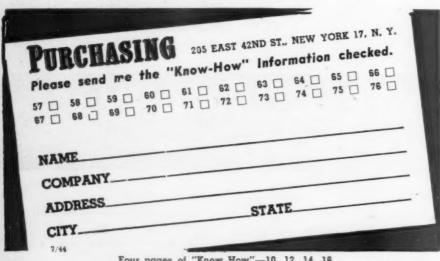
72. PRESSURE VESSELS — "Pressure essels and Fabricated Steel" is the title of bulletin describing pressure vessels made by the Union Iron Works.

73. INSULATED PIPE CONDUIT - Bulletin describes Ric-Wil prefabricated, insulated pipe conduit and new drive coupler which is adaptable to mechanical or welded closure, which eliminates the need for skilled workmen. The conduit is shipped in 21-foot sections, completely prefabricated with pipe or pipes, insulation and aligning pipe supports. 2V is adaptable to underground, surface, or overhead installation. Ric-Wil Company.

74. SAFETY COLOR CODE-Booklet issued by DuPont Company outlines Safety Color Code for Industry, built around colors that are commonly recognized and have high visibility and attention value. Six colors and their specific jobs are described. very interesting and practical booklet. E. I. du Pont de Nemours & Co., Finishes Divn.

75. OIL RECLAIMER - YM Robot Refiner, in capacities ranging from 4 gal. per hour to 3000 gal. per hour is described in bulletin YM 700. Units are said to be capable of restoring all kinds of lubricating, hydraulic, cutting and vacuum pump cils, and to "clean Diesel engine oil right." Youngstown Miller Co.

☐ 76. DIES—Kirksite "A", the modern alloy for sheet metal dies is described in 16-page booklet which tells of its characteristics, advantages and uses. Kirksite is a zinc-base alloy for sheet metal blanking, forming and trimming dies. It is said to make for higher production and lower costs. National Lead Co.



If your plant does surfacing jobs with this



or this



or this



.. or if you final-finish with



or this



or this





SKILSAW SANDER-GRINDER—Ideal power unit for use with 6-in. cup grinding wheels or wire cup brushes and 7-in. sanding discs.

### YOUR BEST BUYS for BETTER RESULTS ARE THESE SKILSAW TOOLS!



SKILSAW DISC SANDER—Special or heavy duty models, for 4 or 5-in, cup wheels or brushes.

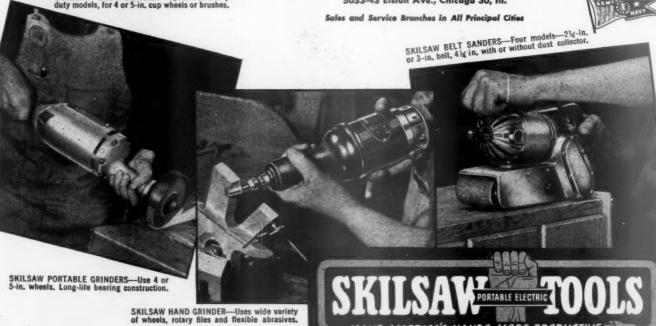
To get better results quicker on any finishing job, you need the power of these SKILSAW TOOLS for top load speed. You need the compactness, lighter weight and perfect balance of SKILSAW TOOLS for easier handling, for more accurate work and peak output on round-the-clock production.

Not only will SKILSAW TOOLS help you turn out more jobs better and faster, they'll lower your maintenance costs, because they give trouble-free service longer.

Ask your distributor to show you how these SKILSAW TOOLS will put more efficiency into all of your finishing jobs. Call him for a demonstration today!

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A new plant for you — modern, up-to-date,

efficiently and economically run, and waiting to fill
your order for precision-molded rubber or synthetic items with

the same skill and dispatch which have won
three Army-Navy E awards for excellence

in essential war goods.

Acushnet Lown 100.

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# Hundreds of heavy duty trucks, working on the Alaska Military High-way, equipped with Cook Bros. (Los Angeles, Calif.) dual drive units, are proving the high efficiency and economy of Link-Belt Silverlink Roller Chain on heavy duty service.

OUGH SERVICE, building highways through the Canadian wilderness! Tough on men, merciless on equipment! Only the most rugged can withstand the rigors of such operations. That's why Link-Belt Silverlink Roller Chain is used on the final drive of these trucks, as on similar equipment used by loggers, lumbermen and contractors throughout the western states.

Great strength in relation to weight,

stamina to withstand shock loads, and smooth, positive, flexible operation are reasons for choosing Link-Belt Silverlink Roller Chain for a wide variety of power applications. Engineers and manufacturers should send for Link-Belt Silverlink Roller Chain data book No. 1957. Learn how you can profit through these features of Silverlink Roller Chain.

#### LINK-BELT COMPANY

Chicago 9, Indianapolis 6, Philadelphia 40, Atlanta, Dallas 1, Minneapolis 5, San Francisco 24, Toronto 8. Offices, Factory Branch Stores and distributors in principal cities.



Tui

## DIGS OUT THE FACTS

for Money-Saving Stockroom, **Toolroom and Production Line Setups!** 



Lyon Surveys are based on many years of experience in helping manufacturers get the maximum use of storage and production facilities. Detailed recommendations in a written report include; (1) Storage layouts that save valuable floor area: (2) Toolroom set-ups that make possible more productive hours from every available die and small tool: (3) The use of standard or special shop containers for safer, faster handling of materials in production.

A Lyon Survey may help you speed up production of vital war jobs . . . or contribute to quick reconversion for efficient production of post-war products. This survey service is offered without obligation. Write us for full details.

#### WHAT ABOUT POST-WAR?

Do your post-war products include sheet metal or aluminum? Check Lyon's manufacturing and designing facilities.

#### METAL PRODUCTS, INCORPORATED

General Offices: 733 Madison Avenue, Aurora, Illinois

anches and Distributors in All Principal Cities

AVAILABLE THROUGH LYON DISTRIBUTORS Everywhere



Shoprobe.
Saves floor space. An economical, efficientlocker cientlocker facility.



Lyon Wood Shelving. Adjustable every 3" vertically and horizontally



on Bench Legs.
o. 2401-11.
s Illustrated
\$2.95.



Lyon Wood Cabinets.
Storage, Wardrobe and combination Types.





Lyon Stool. No. 18. As shown, \$1.65.



Machine Tool Cabinet Bench. No. 2345-11. Illustrated \$17.05.

"RB" Shop Box. No. 445F11. As Illustrated \$1.55

Above prices are F.O.B. Factory. When shipment is made from nearest assembly plant, prices will be quoted F.O.B. that Plant.

## This Head and Yours should get Together

Subjects:

Increasing Production
Conserving Manpower
Reconversion Planning



Available to you now are the services of Lighting Specialists, not only for recommendations on the improvement of existing lighting to meet immediate needs, but also in connection with your reconversion planning.

First step in such planning is a study of each specific location and the kind of work involved. With the Seeing Task thus determined, plans can be formulated as to the amount of light and type of lighting which are needed to provide the most efficient seeing.

In determining how much light and the type of lighting that are required, the Lighting Specialist will take into consideration: the size of detail to be seen; the contrast between the object being worked on and the surroundings; the brightness of the object; the speed of seeing required; and, the duration of the visual task. Further, he will suggest ways of eliminating annoying glare, sharp contrasts and harsh shadows; prescribe proper lighting units to distribute and direct the light where most needed.

By calling upon your local Electrical Wholesaler who distributes Benjamin Lighting Equipment or upon your local Light and Power Company, the services of a Lighting Specialist may be obtained without cost or obligation. Available through them, also, is the assistance of Benjamin field engineers, when such are needed, for lighting recommendations and specifications.

Many manufacturers now engaged in reconversion planning are utilizing the aid and assistance of their local Lighting Specialists. For lighting is a production tool that goes hand in hand with all other production tools . . . and should be considered concurrently.

## BENJAMIN Lighting Equipment

Distributed Exclusively Through Electrical Wholesalers



Send for a copy of this FREE BOOKLET containing much valuable information on how to obtain best lighting results. With it will be sent complete information on how you may obtain the assistance of the Benjamin Field Engineer in analyzing the performance of your lighting and in making recommendations. Address Lighting Service, Benjamin Electric Mfg. Co., Dept. Y, Des Plaines, Illinois.

with a Stinger that Penetrates

## 7 REASONS\* WHY

Your best bet for AC Welding is a "Bumblebee"

Every feature of design and construction, both inside and outside the sturdy case of the Wilson "Bumblebee", has been planned to give the utmost in efficient, dependable and economical service:

- Precise, Stepless Adjustment of Welding Current to any value within NEMA range, provided by easy-turning crank.
- Efficient Ventilation by motor-driven fan assures safe, dependable operation, even when welding with maximum current.
- Reduced Power Factor Charges and relief for overloaded powerlines is provided by built-in capacitors.
- Coils Protected Against Fire and Vermin by mica and glass fabric insulation.
- Interchangeable Primary Terminals permiteasy, rapid change from low to high line voltage or vice versa.
- Output or Secondary Terminals Readily Accessible by removing 4 screws which hold small insulating panel.
- High Visibility of Current Indicator is assured by large, easily read calibrated scale located outside case.

These features are incorporated in every "Bumblebee" welder—either regular or all-weather model. "Bumblebee" welders are also performing a valuable service as a power source for automatic welding heads.

In addition, the "Bumblebee" offers all the advantages of AC welding:

- Low Maintenance because of absence of moving parts
- -Low Power Costs because of high electrical efficiency
- -Faster Welding due to absence of arc blow and use of larger electrodes
- -Improved Quality of Welds

-at no greater first cost than other types of welding equipment.

Other AC welders in 100, 200, 750, 1000 ampere sizes. Mail the coupon today for new catalog – or write to your nearest Airco office.

BUY UNITED STATES WAR BONDS

## 300 AND 500 AMPERE SIZES PR Air Reduction 60 E. 42nd Street New York 17, N.Y. Please send copy of your new "Bumblebee" Catalog

Address.....

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#### AIR REDUCTION

General Offices: 60 East 42nd Street, New York 17, N. Y. In Texas: Magnolia Airco Gas Products Co. General Offices: Houston 1, Tex. Offices in all Principal Cities



Using a new and modern principle of internal combustion, the High Speed Jet Propulsion Plane will travel the stratosphere at tremendous speeds – continuously "exhaling" its way through even the thin upper atmosphere. It promises to compress still further geography of our narrowing world.

Among the amazing developments in flight, none has caught greater public fancy than the Jet Propulsion Plane. Previewed here in scale model and realistic background designed by Norman Bel Geddes, an idea is given of how this plane may appear in Tomorrow's skies.

And when the day arrives that public fancy turns to public patronage – it will be because Fafnir, working closely with aircraft manufacturers, has designed and built the

precise and practical ball bearing units necessary to the swift jet plane's controls.

Planes, cars, household appliances, machinery – every useful vehicle and device that makes use of rotary power – can be operated friction-free when equipped with Fafnir Ball Bearings. And you can depend on Fafnir for your wants because the Fafnir line is a complete line – individually applied! The Fafnir Bearing Co., New Britain, Conn.





#### ... with SIMONDS Metal Bands

For straight cuts, or for contour sawing, Simonds Hard Edge Metal Band Saw Blades stand up longest...cut with greatest smoothness and accuracy... delivering performance such as that cited above, which was a competitive test on SAE 1035 steel. This is assured by even tooth-set on both sides of blade, by correct milling of teeth, and by automatically controlled hardening of the alloy blade. Finally, joints are welded for utmost strength.

This extra quality, controlled by Simonds from

metallurgical laboratory all the way through the famous windowless plant, means that machine band-sawing with Simonds Hard Edge Blades can be done with a high degree of accuracy that saves the time and expense of many milling and shaping operations. Have your industrial supply distributor bring a Simonds Cutting Engineer to make a quick survey of your metal-bandsawing operations—and see what he can do to step up output and blade-life. No cost or obligation.

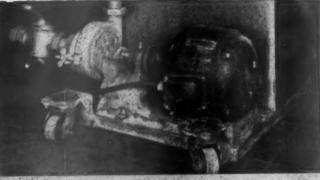
SHORTEN THE WAR

BRANCH OFFICES

1350 Columbia Road, Boston— 27, Mass.; 127 S.Green St., Chicago—7, Ill.; 228 First Ave., San Francisco—5, Calif.; 311 S. W. First Ave., Portland—4, Ore.; 520 First Ave. So., Seattle—4, Wn.; 31 W. Trent Ave., Spokane—8, Wn. SINONDS SAW AND STEEL COMPANY SAW AND STEEL COMPANY EITCHBURG, MASSACHUSETTS

PRODUCTION TOOLS FOR CUTTING METAL, WOOD, PAPER, PLASTICS

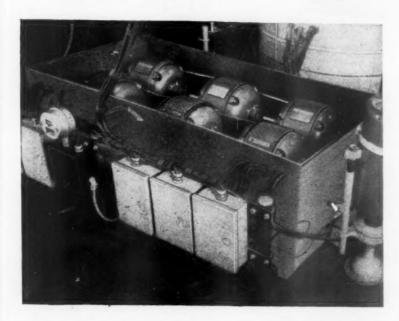
## DOUSED DAILY!



G-E Tri-Clad motor coupled to a centrifugat pump on a portable cleaner in the milk plant of H. P. Hood & Sans, Inc., Charlestown, Mass.

POWERING A DAIRY PUMP, this Tri-Clad splashproof motor gets a dousing every day as the plant is hosed down. After years of service, frame and end shields are virtually uncorroded, insulation is going strong. G-E "protection tests", both in the development of the Tri-Clad design and in our daily production, help us assure you of long-lasting service from Tri-Clads on motor-wracking jobs like this.

## "Hot Box" at 100% humidity tests TRI CLAD motor protection

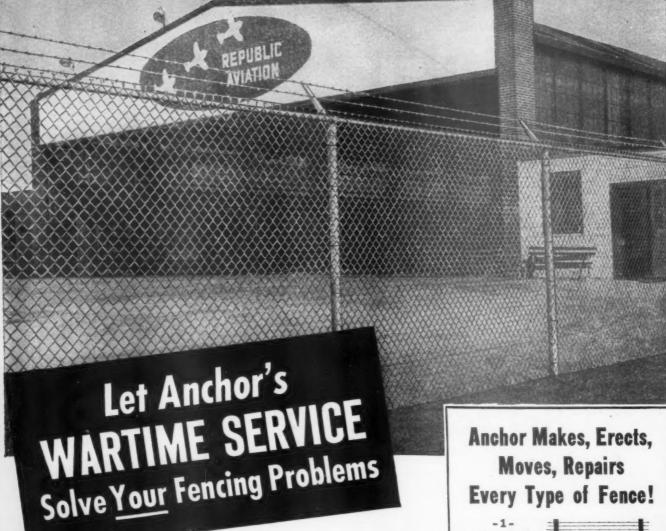


Here is one of the many development tests which helped to prove the extra stamina engineered into the Tri-Clad design. In the bottom of this moisture box, just below the motor base, two inches of water was maintained at 212 F. The cover kept the humidity within the box at 100 per cent. By operating motors in this atmosphere to the breakdown point, G. E. got the low-down on the coil insulation's moisture resistance. Tri-Clad motors, in both open and splashproof construction, showed up unusually well in this extra-severe test. General Electric Company, Schenectady, N. Y.

GENERAL % ELECTRIC

Every week more than 192,000 G-E employees purchase more than a million dollars' worth of War Bonds.





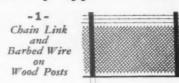
TODAY your industrial fencing problems are complicated by wartime restrictions-so get the benefit of Anchor's special wartime service! Although restrictions make it impossible for you to obtain standard Anchor Fence (illustrated above) unless your problem deserves special government consideration, acceptable substitutes, shown at right, are still available under the usual priority regulations - and you can count on expert Anchor Fence Engineers to find a practical answer to your needs.

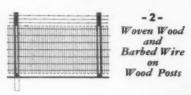
Experienced erecting crews operating out of Anchor's 16 branch offices can erect any of the fences pictured, quickly and efficiently. If you require some other type of barrier, such as a board fence or concrete wall, Anchor men can erect it quicker and better. If you want your present fence moved to a new location, or if it needs realigning, repairing, or painting, call in our experienced men. Our nationwide organization means fast service.

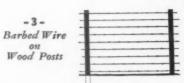
Consult the classified section of your telephone book or write for address of nearest Anchor representative. No obligation. You'll find that Anchor's specialized knowledge can save you time, money, and headaches on any

fencing problem. Anchor Post Fence Company, 6615 Eastern Avenue, Baltimore-24, Maryland.

## **Every Type of Fence!**





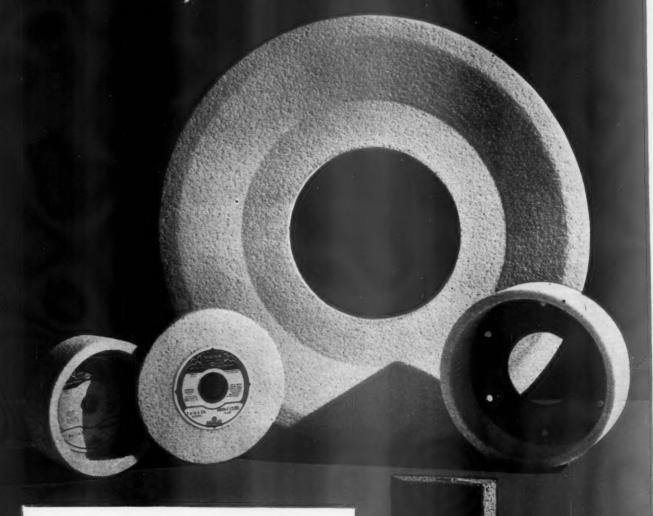


#### Anchor Also Makes:

Chain Link Fences Woven Wood Fences Barbed Wire Fences High Board Fences Indoor Factory Enclosures Safety Screening Devices Factory Window Screening Factory Partitions

ON ANY FENCING PROBLEM CALL ANCHOR





Industry now need not be handicapped by size limitations on grinding jobs that require open structure wheels—where the contact is broad—where the stock removal is especially heavy—where extra coolness of cut is essential.

Norton Open Structure Wheels are being supplied as large as 24" diameter by 4" wide and 20" diameter by 6" wide—and, of course, in all the usual tool room and surface grinding sizes and shapes, including segments.

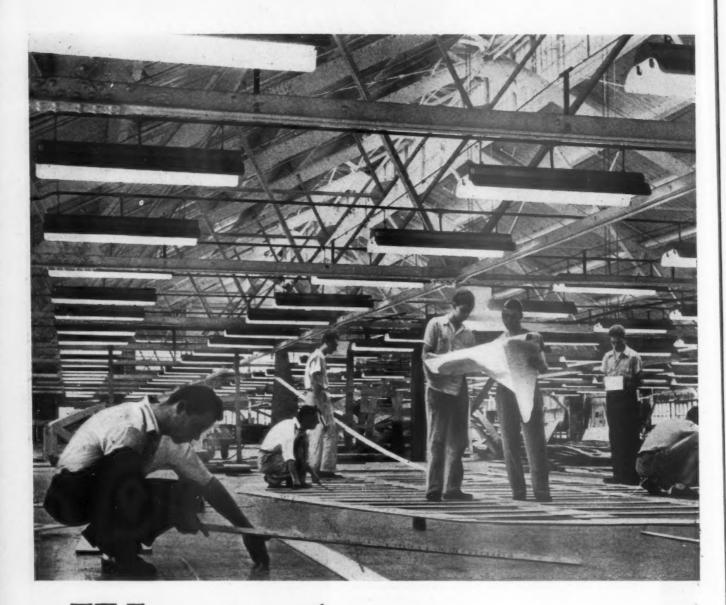
Norton Open Structure Grinding Wheels and segments are uniform—the same grinding action every time—a result of the Norton Controlled Structure process of manufacture.

NORTON COMPANY, Worcester 6, Mass. Behr-Manning, Troy, N. Y., is a Norton Division

NORTON ABBASIVES

JUL

## 200 ACRES OF







MAZDA LAMPS FOR SEE-ABILITY

LET'S ALL KEEP BACKING THE ATTACK . . . BUY MORE WAR BONDS!

Enjoy the Westinghouse radio program with John Charles Thomas-NBC, Sunday, 2:30 p.m., E.W.T.

#### BLUEPRINTS TO CHECK

Westinghouse Mazda Lamps, is helping build the greatest fleet in history. In one shipyard alone, draftsmen and engineers must work with more than 200 acres of blueprints in a single year See-ability makes this vital eye-work easier, enables ship-building Americans to work faster and more accurately, with a minimum of fatigue. Through See-ability, efficiency is increased, output speeded, eye-strain reduced. Consult your Westinghouse dealer about See-ability with bright, long-lasting Westinghouse Mazda Lamps, or write Westinghouse Elec. & Mfg. Co., Bloomfield, N. J. Plants in 25 cities . . . offices everywhere.



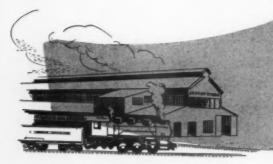
Wartime lighting advances made by Westinghouse engineers will lead to higher lighting standards for postwar America, with new and better ways of using light in every kind of business, industrial, transport, commercial and home activity. Higher levels of light for schools will bring easier seeing, faster learning, better work. Light in new colors, lamps in new shapes and sizes, will offer a host of new display and merchandising opportunities to progressive stores and show rooms. Whatever your plans, be sure you take full advantage of Westinghouse lighting improvements.



## JESSOP'S

COMPLETE SPECIALTY STEEL SERVICE







WAREHOUSING

#### MILL SHIPMENT

X-4130 Sheets

Stainless Bars, Plates and Sheets Valve Steel Bars

Cold Rolled Untempered Strip and Sheet in High Carbon, Special Alloy and Tool Steels Cold Rolled Tempered in Strip Composite Stainless and Composite Tool Steels Tool and Die Steels Cold Drawn-Centerless Ground Tool Steels Cast-to-Shape Carbide Tipped Tools High Speed Tool Bits



Whatever your requirements may be for electric furnace specialty steels, Jessop is able to service them. Adequate supplies of standard analysis products are maintained in conveniently located warehouses. Stocks are also maintained at the mill to supplement our warehouse service. When regular analysis steels do not provide the desired physicals for unusual applications, special analyses are developed. All Jessop Electric Furnace Steels are produced in modern equipped mills under rigid chemical and metallurgical control. The knowledge gained through 43 years of experience is available to help you find the solution to your steel problems. Contact the Jessop representative today.

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FASTEST THING IN FASTENINGS

## Look at the Speed Wests





STARTING POSITION

INWARD THREAD LOCK



An arched spring lock and an inward thread lock are basic features found only in Speed Nuts. The ingenious design that sets up these two forces accomplishes more than you'd realize unless

you checked into it more closely.

Spring steel Speed Nuts have a base which is well arched, and arched prongs that are formed to follow the helical pitch of standard screw threads. As the screw is tightened, the arch is reduced, forcing the prongs deeper into the root of the screw threads. This provides a double spring-tension lock that prevents vibration loosening.

Speed Nuts eliminate the use of lock washers and are 50% to 75% lighter in weight than other self-locking nuts. They are faster to apply and drastically reduce assembly costs. Double your use of Speed Nuts and you will double your assembly savings. Write for literature.

#### TINNERMAN PRODUCTS, INC.

2050 FULTON ROAD

CLEVELAND 13, OHIO

In Canada . . . Wallace Barnes Co., Ltd., Hamilton, Ontario In England . . . Simmonds Aerocessories, Ltd., London

The lightest weight self-locking nuts ever produced!



This office is "SOUND-CONTROLLED" with Sprayed "LIMPET"

Here's an office with an eye ... and an EAR ... to the future. Its ceiling is treated with the latest word in modern acoustical materials . . . K&M Sprayed "Limpet" Asbestos.

The whole problem of sound control in the offices and factories of tomorrow is one that is receiving an increasing amount of attention from industrial men, designers and architects. For it is known that the elimination of unnecessary noise not only results in greatly increased efficiency, but improves overall working conditions as well.

The importance of "Limpet's" role in helping bring about these conditions will be apparent in the future. At the moment, wartime demand for "Limpet" is so great in other fields, that it is not always immediately available for industrial or commercial work.

But if you're planning for the future, you owe it to yourself to consider Sprayed "Limpet" Asbestos. Here are some of the advantages that this unique acoustical treatment gives you:

No cutting or fitting—completely covers, completely insulates—no seams, no joints, no holes. Easily applied-sticks tight to any clean surface regardless of shape of composition.

High noise reduction coefficient of .70 for a 3/4" thickness.

Fire-resistant and heat-insulating—thermal conductivity .30 at 75° F.

Surface may be covered with as many as 10 coats of oil emulsion paint without seriously impairing efficiency.



Our Ambler plants proudly fly the Army-Navy "E" flag with its star—an honor awarded K&M employees "for continued outstanding production of war materials."

the

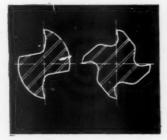
COMPANY · AMBLER · PENNSYLVANIA we're" On Top" of END N

ERIES

The performance of Brown & Sharpe End Mills is outstanding — they cut fast, they cut freely and their power consumption is low. This means greater production, greater economy and long end mill life.

The <u>rake angle</u> is the result of exhaustive tests. It reduces power consumption and increases the number of pieces per sharpening.

The <u>coarse teeth</u> increase cutting efficiency and stronger teeth are possible through the use of a double angle land.



Hollow faces and rake are produced by a generating process.

Angle of rake tends to remain constant as mill is resharpened.



At left—small helix angle for milling slots where accuracy is essential. At right — steep helix angle provides smooth, fast cutting action for most requirements.



BROWN & SHARPE MFG. CO. Providence 1, R. I., U. S. A.



. . . We urge buying through the Distributor



BROWN & SHARPE CUTTERS

## Waking strong the things that make America strong



## "Turning on the heat" for a Refrigerator

A JEEP absorbs terrific punishment as it hits the high spots and jolts to earth. It could be in trouble all the time if its bolts and nuts didn't hang on to each other with bull-dog tenacity.

A refrigerator moving along an assembly line could bottle-neck at crucial points if its boots and nuts didn't fit together easily and tighten quickly.

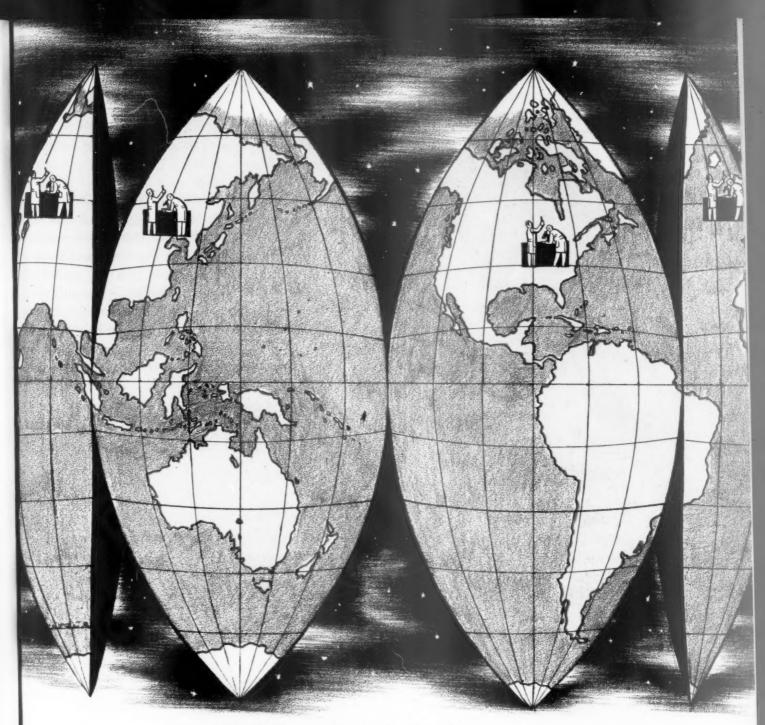
For strength that survives the stresses of shock, vibration and pull . . . for accurate mating that speeds up assembly: standardize on RB&W fasteners.

It's not by accident that RB&W Empire products have found their way into so much of the nation's farm machinery, power and transportation equipment, home appliances, construction equipment and furniture. Their acceptance is the result of 99 years of purposeful planning . . . 99 years of relentless effort to develop equipment and processes for improving fastener properties . . . perfecting automatic cold heading and cold punching . . . creating new thread-forming techniques.

And new developments on the way will give further reasons why "RB&W" on your order means a step forward toward stronger products and faster assembly.

Russell, Burdsall & Ward Bolt and Nut Company. Factories at: Part Chester, N. Y., Carappolis, Pa., Rock Fells, Ill. Sales offices at: Philadelphia, Detroit, Chicago, Chattanooga, Los Angeles, Portland, Seattle.

11114711010101811 RUSSELL, BURDSALL & WARD BOLT AND NUT COMPA



#### THIS IS BASIC .

This four-page advertisement is in Basic—a short form of English which may be learned very quickly. In it there are only 850 words, but the system is so well worked out that with them everything needed for the purposes of everyday existence may be said. With the addition of international words and a small number of science words, it is possible to put almost any science writing into Basic.

Our only reason for writing this in Basic is the thought that it may be of interest to our readers to see how a discussion of chemicals goes in this pint-size language. Basic is making such headway, even under war conditions, that it seems certain to take an important place in trade between nations when the war is ended.

Had this advertisement been pointed overseas, we would have given the sense in Basic of certain non-Basic words which are used. Such words are marked with a star so that you will be able to see when we go outside the word lists for science writing. Hercules Powder Company, Wilmington 99, Delaware.

Ethyl\* Cellulose keeps front line dressings clean



Every American fighting man has with him a dressing for wounds when he goes to the front. This dressing has to be ready at all times—and it has to be hospital-clean. To keep it clean, through any amount of heat and cold and rain and dust and violent fighting, it is folded between layers of metal and paper coated with Hercules Ethyl Cellulose. This covering of ethyl cellulose, fixed tightly together at the edges by heat and pressure, makes an airtight, watertight seal. All the ethyl cellulose we make is now for war, but new uses for peacetime are coming to light very frequently. For details, send to the Hercules Cellulose Products Department.

Good supply of low-cost resin\* may be what you're looking for

Vinsol Resin in any amount will be shipped as quickly as orders come in. Vinsol is a hard, dark resin with acid-number 93 and melting-point between 112°C. and 115°C. It is plastic under heat and pressure, and goes into stable mixtures with a number of plastic compounds. Among possible uses: as an emulsion-former; in paints and varnishes\*; as an addition to shellac\* in plastics; and a number of others. Vinsol may be the answer to a question which is now before you. You will get full details and a sample\* by writing Naval Stores Department at Hercules.



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# Low cost prints with lacquer\*

Beautiful printing on cloth is now being done at low cost with nitrocellulose lacquers. When made with the right formulas, these printing lacquers take full, sharp color into and through the cloth, and are sunproof. It takes only one-third the number of operations needed in other processes. Printed from round copper plates, or from stencils\*, the colors are soft and clear, are undamaged by perspiration\*, frequent washings with common soaps, or dry-cleaning. All sorts of cloth (even the thinnest) and paper have been printed without trouble by this method. Cellulose Products Department, Hercules Powder Company.

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# For paper and cloth coatings, and other uses . . . the Flexalyns

Flexalyn is an interesting rosin\* ester\* developed by Hercules. It makes stable mixtures in which the materials have no tendency to come out; thin coatings which will undergo much bending and twisting without cracking, and which take a solid grip on surfaces. In addition to their value in paper and cloth coatings, they are put to good use in inks, rubber compositions, lacquers, varnishes, waxes. You may have complete details on these and other uses for Flexalyn by requesting them from the Synthetics Department, Hercules Powder Company.

### Paper coating from a

### resin in good supply



It is no longer necessary to have the hard-to-get natural resins such as Manila, Dammar, shellac for making good paper coatings or "varnishes." Such varnishes are made today with Hercules Poly-pale resin. Varnishes made with Poly-pale have good color, are bright, get dry quickly, and are sticky enough for gripping tightly. Details about Poly-pale and its uses may be had by sending to Naval Stores Department, Hercules.

"Dresinate", "Flexalyn", "Poly-pale", and "Vinsol" are trade-mark names registered by Hercules Powder Company in the U.S. Pat. Off.



Dresinates keep asphalt\* in its place

> In asphalt-base floor coverings such as linoleum\*, there is frequently danger of the asphalt coming through the coating—but not when it has been made into an emulsion with Dresinates, Hercules resinates\* which make solutions in water. For, like other emulsionformers, Dresinates do not go into solution with asphalt. There are a number of other uses for Dresinates such as in polishes, soaps and disinfectants\*, metal cleaners, inks, paints, and fireworks. Send in for details to Paper Makers Chemical Department, Hercules.

And here's a new one—
sodium carboxymethylcellulose\*

Now to be had only in small amounts for purposes of experiment, sodium carboxymethylcellulose is Hercules' newest form of cellulose. It goes into solution in water, and experiments are under way at Hercules to see how it may best be used in making emulsions, paints, cloth, oil, and so on. Judging by its behavior, it will be of value

in making emulsions, in making things stable, and as a skin-former. For more about the possible uses of sodium carboxymethylcellulose, such as boiler compounds, creaming\*latex\*, oil-drilling\* muds, leather coatings and others, send to Cellulose Products Department, at Hercules.

"Dresinate", "Flexalyn", "Poly-pale", and "Vinsol" are trade-mark names registered by Hercules Powder Company in the U.S. Pat. Off.

### HERCULES POWDER COMPANY

1922 Delaware Trust Building Wilmington 99, Delaware

Kindly send me further details on:

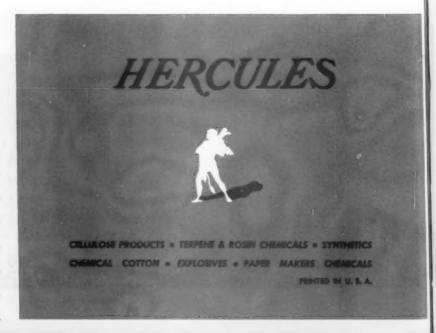
Name\_\_\_\_

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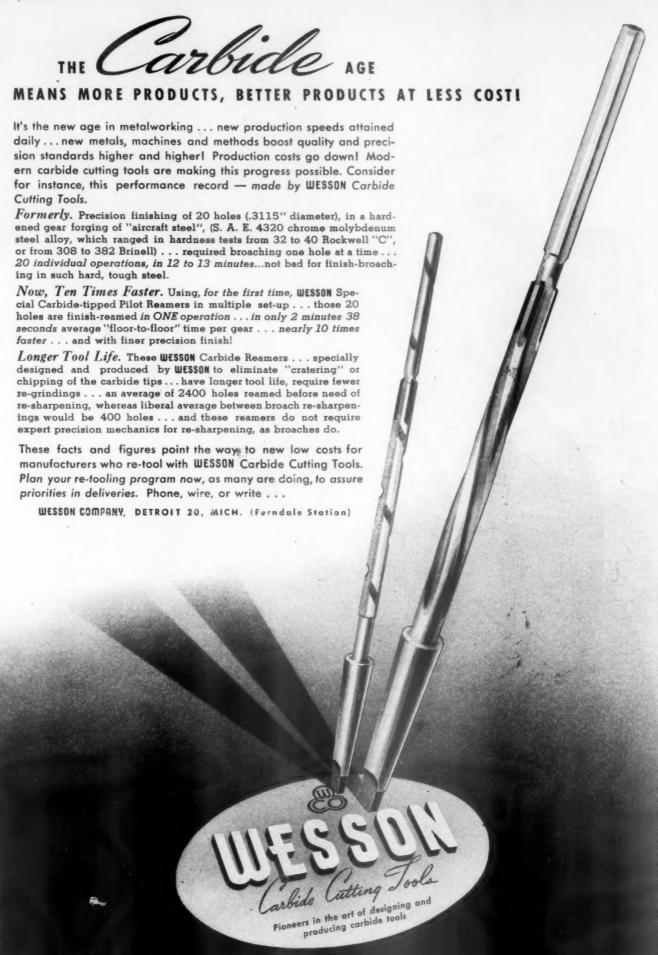
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You wouldn't

# put splints on a TOE DANCER



# LAY-SET Preformed IS FREE

The preforming process frees LAY-SET Wire Rope of muscle-bound stresses. Being <u>preformed</u>, Hazard LAY-SET is not hampered by needless strains. Rather, every wire and strand is free to do its full share of work from the very first hour it is put on your machine.

Hazard LAY-SET Preformed is a "pre-broken-in" rope; it resists snarling and kinking; it handles easier, faster, safer and cheaper. It possesses high resistance to bending fatigue and so lasts longer—much longer than non-preformed wire rope. Regardless of where or how you use wire rope, whether for running or standing service, specify Hazard LAY-SET Preformed—the rope that gives you greater dollar value.

Hazard LAY-SET Preformed Wire Rope is "in the service" on countless jobs for the Armed Forces where it is proving its many advantages. Specify it for your use.

HAZARD WIRE ROPE DIVISION • Wilkes-Barre, Pa., Atlanta, Chicago,
Denver, Fort Worth, Los Angeles, New York, Philadelphia, Pittsburgh, Portland, San Francisco, Tacoma
AMERICAN CHAIN & CABLE COMPANY, INC. • BRIDGEPORT • CONN.



WIRE ROPE

JULY,



### A Single Cardox System Provides Engineered Extinguishing Coverage for One or a Number of Hazards...Large and Small

The swift efficiency of carbon dioxide for fire extinguishment is thoroughly recognized. But, where a few pounds, properly applied, will stop one fire, another may call for tons . . . for example, to provide total flooding of large plant production areas, or for severe outdoor hazards.

With the Cardox method of control and engineered application, Cardox CO2 -supplied instantly in pounds or tons -gives new protection scope to this non-damaging, non-contaminating medium for fire extinguishing.

#### **Enhanced CO<sub>2</sub> Performance**

A Cardox System-engineered for the specific hazards it covers-extinguishes fires by a timed mass discharge of Cardox CO2-stored at 0°F. in a mechanically refrigerated Storage Unit.

Enhanced extinguishing performance is possible because, as controlled and applied—in pounds or tons—in Cardox Systems: (1) Cardox CO<sub>2</sub> has uniform extinguishing characteristics regardless of plant or atmospheric temperatures; (2) Applications can be engineered in accordance with the requirements of each specific hazard covered; (3) High CO2 snow yield provides increased cooling effect (carbon dioxide released at 0°F. yields 45% CO2 snow); (4) Effective projection through relatively great distance is achieved-even outdoors.

#### **Tough Hazards Have** "Engineered" Cardox Systems

It is no coincidence that frequently when hazards are toughest to handle . . where fire or damage by the extinguishing medium would disrupt carefully planned war goods production schedules . engineered protection is provided by Cardox Fire Extinguishing Systems.

If you would like more information for use in solving current war plant fire protection problems . . . or in formulating fire protection plans that will prevent dangerous delays in getting postwar production in high gear . . . write on company letterhead for Bulletin 2574.

### CARDOX CORPORATION BELL BUILDING . CHICAGO 1, ILLINOIS

District Offices in

New York, Boston, Washington, Detroit, Cleveland, Atlanta, Pittsburgh, San Francisco, Los Angeles, Seattle

These sketches illustrate simply the broad scope of protection that can be provided by a single Cardox System. The range of efficient applications between these extremes is practically unlimited.



Outdoor Transformers. Local direct application at very high rate builds area flooding effect outdoors. For hazards such as this a Cardox System stands ready at the first flash of fire with tons of Cardox CO<sub>2</sub>, if needed.



Cardox Hose Reel provides effective protection for numerous hazards calling for a few pounds of Cardox CO<sub>2</sub>—or a few hundred.



Cardox CO<sub>2</sub> is supplied instantly in pounds or tons from a single Stor-age Unit containing 500 pounds to 125 tons at controlled low tempera-ture of 0°F, and 300 p.s.i.



SING



Hepplewhite won fame on design alone. Others could use equally good wood and cut just as good dowels and dovetails. But in today's competition you can and must back better design with superior materials tailored to the function of your products.

Chemicals have been tailored into dozens of plastics and each like Formica laminated plastic into many grades with differing properties which make them exceptional for specialized use.

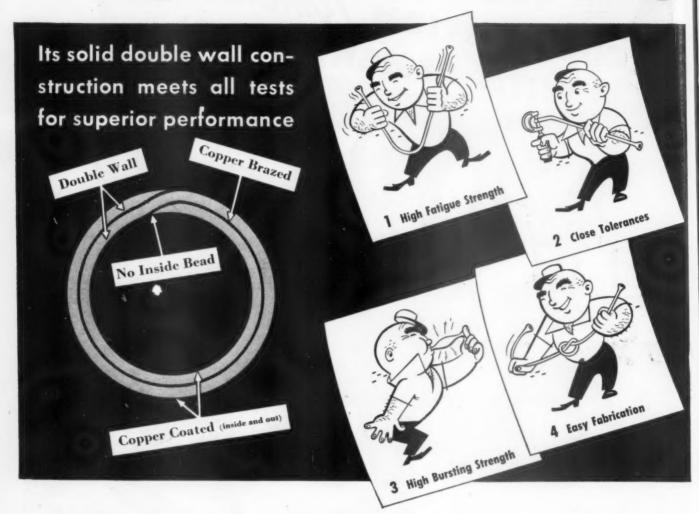
The strength, machineability, dielectric properties, stability of dimensions, moisture and acid resistence of Formica have caused its wide application in communications and other electrical uses. Now is the time to inquire about the interesting properties recent Formica research makes available for your post war products.

COMPANY CINCINNATI 32, OHIO



TUL

# **Bundyweld Steel Tubing**



### Investigate Bundyweld for your tubing requirements

Bundyweld Steel Tubing is laterally rolled twice around from a single strip of copper-coated S.A.E. 1010 steel. The rolled tube is then passed through a brazing furnace from which it emerges as a solid, double-wall steel tube completely copper-brazed throughout the entire 360° of wall contact.

The Bundy double flare, illustrated at the right, assures leakproof, pressure-proof joints, and safely permits frequent removal and replacement of fittings as well as over-torqueing.

Bundyweld is furnished hard or annealed in a wide range of standard diameters and gauges up to 5%" O.D. Special sizes, cold drawn as desired. Also furnished in Monel.

Bundy Research Engineers will be glad to assist with either your war or peacetime tubing problems. Bundy Tubing Co., Detroit 13, Mich.



BUNDY TUBING

UNDY TUBING DISTRIBUTORS:

Pacific Metals Company, Ltd. 3100 19th Street San Francisco 10, California Standard Tube Sales Corp.

1 Admiral Avenue
Maspeth, New York City, N. Y.

Lapham-Hickey Company 3333 W. 47th Place Chicago 32, Illinois Rutan & Company 112 South 16th Street Philadelphia 2, Pennsylvania Eagle Metals Company 3628 East Marginal Way Seattle 4, Washington NG

# DANGER



# CONTAMINATED WIPING MATERIALS CAN SPREAD INFECTION IN YOUR PLANT!

There are many cases on record where disease germs, introduced into plants in unsterilized wiping cloths have caused absenteeism and loss of production and have resulted in increased cost of compensation insurance. Why buy trouble along with your wiping materials?

# MAKE SURE YOUR PLANT IS PROTECTED WITH ALLIED Certified WIPING MATERIALS

There is one sure way of avoiding the danger—look for the Allied CERTIFICA-TION OF STERILIZATION that accompanies every shipment of Allied Wiping Materials. Every cloth has been triple-laundered, treated in a chlorine solution, rinsed four to six times and sterilized at 212 degrees Fahrenheit.

CERTIFIED

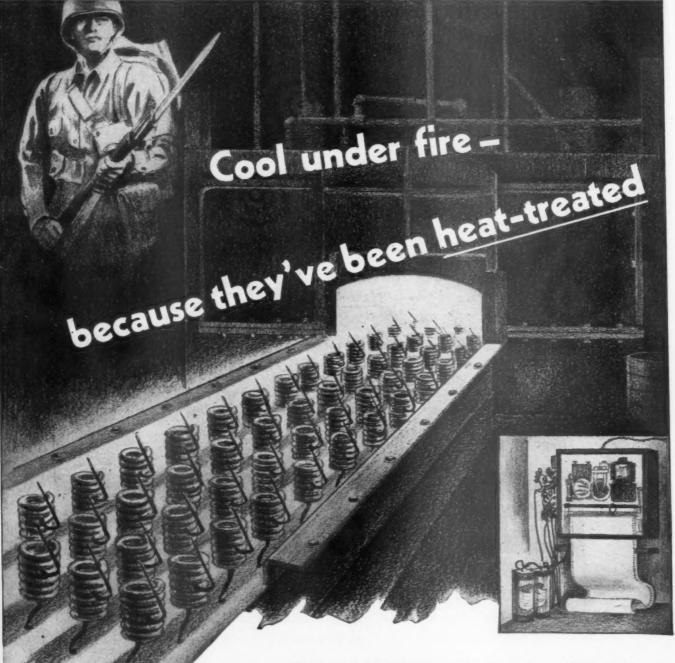


PROTECTION

WIPING MATERIALS CO.

CERTIFIED
WIPING CLOTHS

607 S. LUZERNE AVE., BALTIMORE-24, MD.



The best trained troops require tempering under fire to become seasoned fighters. Springs, too, need proper tempering to fit them for the rigorous demands of tough fighting mechanisms. Because heat-treatment is so vital to spring performance, its selection and control come within the realm of our laboratory technicians, with automatic regulation that insures parade-ground precision—precise action—long service. No guesswork—Barnes-made Springs are under strict discipline in every stage of manufacture. They obey your orders.

CONSERVE METAL - DESIGN WISELY



WALLACE BARNES COMPANY DIVISION OF ASSOCIATED SPRING CORPORATION BRISTOL, CONNECTICUT, U. S. A.

# ADD an hour!

ring linings at anywhere near mass production was considered an impossibility until broaching was called in Now, 400 bearings on hour can be made—reducing "breaking-in" periods and eliminating hot spot replacements.

Because of the unevenness of bearing linings broaching engineers figured a maximum and minimum cutting action and devised cutting blades to cover maximum babbit removal. Cutting at 60 feet per minute with a 120 foot return this vertical, 5-ton, 32" stroke Lapointe Sur-

face Broaching Machine produces a finished wall thickness to .0001 tolerance and is one of the fastest cycle time machines on the market. It has a special automatic fixture that makes loading and unloading easy. Each of the cutting blades removes a maximum of .010 each stroke, when maximum stock is to be removed, and are so arranged that regardless of thickness of babbit the bearing comes out completely finished well within tolerance. It operates thus:

- 1. Work is put in place starting cycle.
- 2. Fixture moves into cutting position.
- Machine slide completes cutting stroke.
- 4. Fixture returns to out stop.
- Main slide returns ready for next cycle.

It's the machine, the broach and the unsung design engineers who made this pertinent contribution to production.



The finished work - com-

pleted stroke.

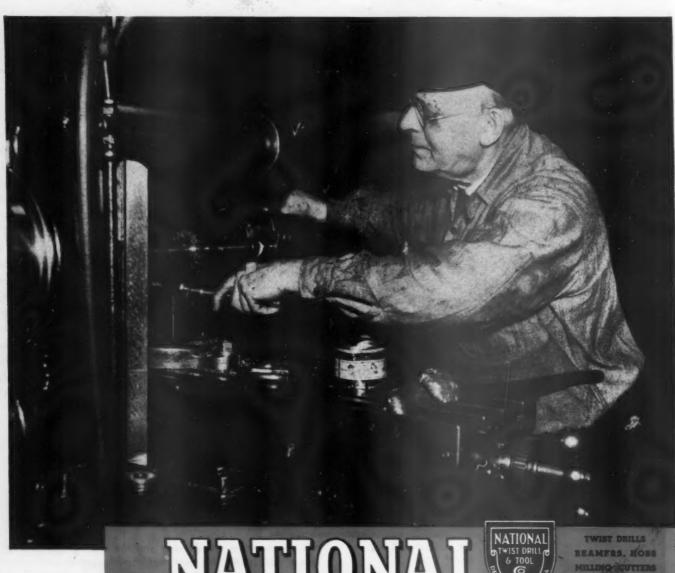
hene Tool Company

BROACHES AND BROACHING MACHINES

Jui

# HANDLE WITH CARE!

Hardened tools are tough-but cutting edges are brittle. Hammering them onto arbors or into tool holders can be as harmful as dropping them on machine tables or concrete floors. Until the last shot is fired, tools are weapons. Treat 'em right!



National cutting tools, sold by leading Mill Supply Distributors, are tools of character.

NATIONA



COUNTERBORES SPECIAL TOOLS

TWIST DRILL AND TOOL COMPANY

DETROIT AND ROCHESTER, MICHIGAN

# Piping systems...any kind...for any service CRANE equips them fully

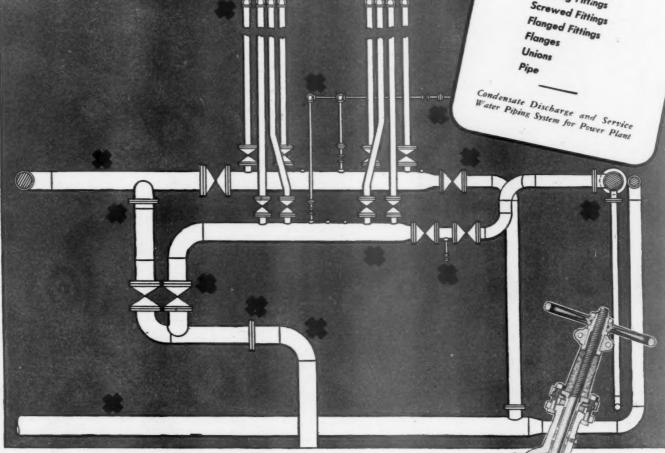
ONE SOURCE OF SUPPLY... ONE RESPONSIBILITY FOR ALL MATERIALS

No matter what your needs in piping equipment—whether for power or processing systems—all the benefits of single source supply can be yours. Pipe, fabricated piping, valves, fittings—all these essential materials down to the last accessory are available from Crane. You choose exactly what you need—from the world's largest selection for all pressure-temperature classes.

Ordering—keeping of parts stocks—maintenance—such operations are simplified if you Crane equip. More important, one responsibility for quality and craftsmanship of piping materials is a primary aid to good installation. Crane meets that responsibility with a record of 89 years' leadership in the piping equipment field. CRANE CO., General Offices: 836 S. Michigan Ave., Chicago 5, Ill.

Equipped by Crane 100%

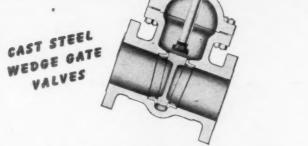
Gate Valves
Globe Valves
Fabricated Piping
Welding Fittings
Screwed Fittings
Flanged Fittings
Flanges
Unions
Pipe



### ONE STANDARD OF QUALITY

Equipping completely with Crane materials insures one high standard of quality in every part of piping systems. That dependable quality is exemplified in Crane Steel Gate Valves: Finest flow behavior results from their straight-through ports. Severest line stresses are overcome with rugged bodies. Smooth operation is maintained by a ball-joint type stuffing box gland, strong teehead disc-stem connection, and ample stem bearings. Positive seating is aided by extra long guide ribs.





VALVES • FITTINGS • PIPE
PLUMBING • HEATING • PUMPS

Jui



# INSUROK HAS LOW MOISTURE ABSORPTION"

THE dangers of damage from moisture and corrosion are minimized when INSUROK is used. And, in addition, it has the stamina to absorb shock and to stand up under rough handling.

It is not strange, therefore, that both Molded and Laminated INSUROK are being widely used in war products—are being specified for use in many types of products for tomorrow.

There are many grades and types

of Laminated and Molded INSU-ROK, with a wide range of chemical, electrical and mechanical characteristics. One or more types of INSUROK will meet practically every requirement.

Richardson Plasticians have had years of experience in working with designers and manufacturers. They will be glad to help you determine the grade best suited to your needs. Write for complete engineering information today.



Every day, parts and products made of Laminated or Molded INSUROK are successfully meeting all kinds of moisture and temperature conditions. Be sure to get the facts about this and other characteristics which are causing INSUROK to be specified for so many types of products.

# INSUROK Precision Plastics

The RICHARDSON COMPANY

MELROSE PARK ILL. NEW BRUNSWICK, N. J. FOUNDED 1868 INDIANAPOLIS 1, IND. LOCKLAND, CINCINNATI 15, OHIO
DETROIT OFFICE: 6-252 G. M. BUILDING, DETROIT 2, MICHIGAN. NEW YORK OFFICE: 75 WEST STREET, NEW YORK 6, N, Y



QUALITY-IDENTIFIED IN EVERY OPERATION

Shafting. Annealed, Strain and Stress Relieved, Heat Treated, Quenched and Tempered Steels. Wide Flats Up to 12" x 2".

FIRST NATIONAL BANK BUILDING . . . PITTSBURGH, PA. 3200 SOUTH KEDZIE AVENUE . . . . CHICAGO, ILL. Mills at Ambridge, Pa. and Chicago, III.



### PROTECTS

The tough, resilient, coiled rawhide faces of C/R Hammers and Mallets strike effective blows without battering or marring ... protects finished

surfaces, machines delicate insulation and parts. Speed die-setting, assembly, no fatiguing re-coil. Reduce breakage and spoilage. Sizes and weights for every need.

C/R Hammers have permanent malleable iron heads which take replaceable insert faces of coiled mechanical rawhide.



STUDENTS and analysts of purchasing matters will be interested in some comparative figures included in the annual report of City P. A. Henry G. Saumsiegle of Waltham, Mass. Although total expenditures for 1943 were considerably less than for the previous year, because of conservation and shortages, the amount of business done with local suppliers actually increased by more than \$16,000, and the proportion of this business to the grand total jumped from 40% to 64%. More experience and a better perspective will of course be necessary to determine whether this is merely a sign of the times or a definite trend. But it may be significant to note at this point that the savings of \$21,214 directly attributable to centralized purchasing were percentage-wise (15.5%) fractionally higher than in the previous vear.

**P**URCHASING and Postwar Planning—any connection be-tween the two? Some progressive managements believe that there is. To FOB's desk comes a striking folder from the Scott & Fetzer Company of Cleveland, now engaged '100% on Patriotic Production" but promising that "Kirby cleaners will be made within three months after the Government gives the 'Go ahead'." That takes a bit of planning. S&F's policy is stated as "Putting Planning into Action! or Action into Planning!" Part of the answer is revealed in the cover photograph, showing the planning committee in session, and there we find an old friend at the table-Herb Williams, P. A., former president of the Cleveland Association and N.A.P.A. Executive Committeeman. On the inside pages we find this further mention:

Purchasing-H. N. Williams, Purchasing Agent, has had years of experience in buying in such a manner as to secure maximum cooperation from the suppliers. Also, low cost without any sacrifice of our high quality standard, is a goal he constantly pursues.

A ND giving additional evidence on the point, another well known Cleveland buyer, Bob Keach, has just relinquished his position as General Purchasing Agent of the Ohio Rubber Company to direct the postwar planning activities of Firestone Industrial Products, at Akron, that branch of the Firestone organization manufacturing rubber and plastic products other than tires.

A LSO in the headlines from man, 25-year veteran of the B. F.



Pin-Up Boy

Goodrich purchasing department, who not only earned his quartercentury service pin on May 1st, but has been voted "Pin-Up Boy" of Department 2410 (Purchasing to you).

N the Boston Sunday Post (June 4), the celebrated Morse family is the subject of the weekly feature "What's in a Name?" And there, upon the roster studded with the names of famous scientists, musicians, educators, and other distinguished bearers of the family name, we find another old friend-William Gibbons (Bill) Morse, Pur-

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chasing Agent of Harvard University. Incidentally, the Business Manager of Purchasing is also a member of the tribe, but doesn't rate a mention.

NY lingering doubt that the purchasing function has definitely gone into reverse was dispelled at the recent Governors' Conference, meeting at Harrisburg, Penna. Addressing the state executives, John Hancock, co-author of the Baruch-Hancock report, and John Ducas of the Surplus War Property Administration urged that state purchasing departments be expanded "to provide facilities for disposal of surplus war property." And at the N.A.P.A. convention, the Purchasing Agent of the Stewart-Warner Corporation explained that it's the job of the expediting division to handle all cancellation notices to suppliers.

WHILE government executives and purchasing men were wrestling with the problem of contract terminations, the workers at the Brewster plant employed the direct approach, introducing to industry and contracting officers the novel technique of the "stay-in strike." And, by gosh, it worked.

ALLAS Purchasing Agents showed what they thought of their fellow-member, N.A.P.A. President Ben Newbery, by coming to the New York convention half way across the continent in such numbers that they walked away with the Attendance Cup. At that, for the past year Ben has spent so much of his time anywhere except in Dallas that the convention offered them their best chance to see him.

Second place in the Attendance awards went to the Northwestern Pennsylvania Association, which has just placed its first representative on the National Executive Committee in the person of Lee Forker of Oil City, newly elected Vice President for District No. 6.

Third place went to the Utah Association, for which Attendance awards are an old, familiar story. Just a few years ago, winning had become such a habit with them that the boys from Salt Lake City voluntarily retired from the competition after taking permanent possession of the trophy, and put up a hand-some cup fabricated entirely of Utah metals for the other Associations to shoot at.



After that—there will be many more tomorrows when "HERCULES" (Red-Strand) Wire Rope will again play its leading part in peace-time production and pursuits. For long service and economical performances include it in your post-war planning.

needed equipment to the

fighting areas, the sooner that

headline will appear.

Meanwhile . . . your wire rope will last longer if given proper care.



ALLUI	Alloy	Form	COMPOSITI				Strangth Strangth Dr per eq in		Florage on		Rockwell Hordress		Density (Specific Gravity)		Melting Point	Elect. Resist	Link	
ALLOY			Copper				Hard to Spring		Hard to Spring		Hand Faring		4°c	ibs per	ibs per	*F	I.A.C.S	101
5%-GRADE A	5	Wire	61.00	3400	5.00		135,000	50,000	2					100				12.
%-GRADEA	10A1		67.00	2300	10.00		109,000	52,000		40.	88.	32.	8.64	.312	539	1920	11.1	9
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%-GRADE A	15A			21 00			93,000	58,000	5.	40.	90	35.	8.70	.314	542	1965	15.9	6.
% - GRADE B	15B	Sheet	58:00		15.00			55,000	2.	36.	94.	37.	8.62	.311	537	1900		
% F.T.	15xi		60.00		1500	1.00	85,000		10.		80.						16.7	6
3% - GRADE A	18A3	Sheer			1800		100,000		3.	40.	90.	38.	8.75	316	545		16.7	6.
3% -GRADE A	IBA3	Wire	6500		18:00		120,000		3.	40.			8.75	.316	545	2030	16.7	6
3% -GRADE B	1844	Sheet			18:00		110,000		2.	45.	95.	40.	8.68	.313	541	1940	18.2	S.
3% -GRADE B	18A4	Wire	55.00		18:00		145,000	62,000	3.	50.			8.68	-313	541	1940	18.2	5
3% - F. T.	IBX1	Rod	62:00	1900	1800	1.00	85,000		13.		80.						17.6	5.
3% - SPECIAL	IBA7	Sheet	7500	7.00	18.00			50,000	4.	32.	88.	25.	8.83	.319	550	2090	16.2	6
		Rod.	75.00	7.00	18.00		80,000			45.				100				
		Wire	75.00	7.00	18.00		115,000		2.	30.								
5%		Sheet			25.00		110,000		4.	30.	94.	60.					23.8	4
5%-CUPRO NICKEL		Sheet			15.00		70,000	45,000	3.	30.	83.	34.		700		2065		8
O%-CUPRONICKEL		Sheet	8000		20.00		85,000	50,000	2.	30.	85.	37.5	8.85	.320	552	2100+	15.4	6
AVAILABLE IN	Gag	Gage Range (inclusive)		Width Range (inclusive)			MISCELLANEOUS											
HEET	16-3	6 845			W	IRE	AND	ROD s	upplie	ed Ro	unal.	Half-	Roun	id (	Quarte	r-Rou	nd C	)va
IRCLES	16-28 845					Half-Oval Hexagon Octagon Square Triangular												
OILS (STRIP)	16-36 Bas		up to							icy -								



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thing he said."

An illustrated catalog describing Emerson-Electric Air Circulators is available for postwar planners.

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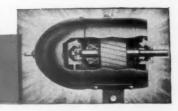
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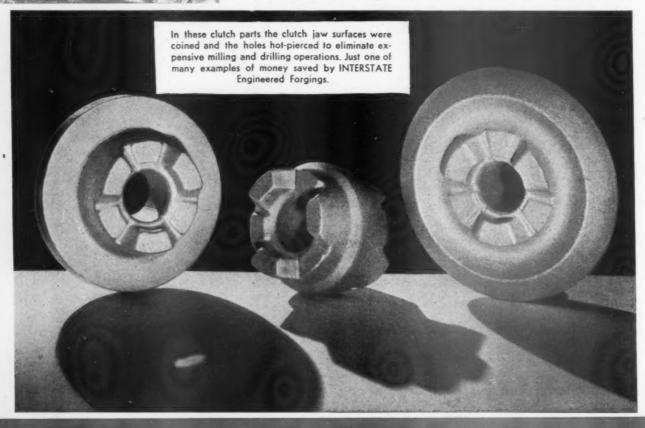




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# PURCHASING PREVIEWS

From the Washington office of

### **PURCHASING**

National Press Building Washington, D. C.

July 1, 1944

For Purchasing Executives:

PLANS FOR A "SMOOTH" TRANSITION into consumer production when cancellations of military supply contracts create idle plant capacity are being formulated. Their general tone is optimistic.

On the more conservative side of the ledger is the result of a survey by the Office of Civilian Requirements, which shows that purchasers of consumer durables will not be hasty.

A similar conclusion has been drawn by the U. S. Bureau of Census. Of those ersons in the market for a new home, 89 percent prefer to wait until they can be assured of pre-war quality.

If these indices are accurate, there will not be a large market for "shoddy" goods.

Quickest conversion for civilian usage will be in the soft goods

field, where only limited adjustments are required.

By the end of this year, there will be available an increasing quantity of metal items. However, the volume of household electrical appliances is not likely to be large.

In the field of construction---normally considered the bellwether of industrial activity---first emphasis will be placed on construction and improvement of highways. Water and sewer installation by states and

municipalities will show an upward trend.

The fall of 1945 will see considerable activity in the housing construction field.

These forecasts do not bear out optimism for a quick conversion. With satisfactory developments on the military fronts, considerable retooling for civilian production will be possible during the next six months. Result of these developments might reach the consumer markets early next year.

Current estimate by WPB officials is that production costs in the hard goods field will be between 25 and 35 percent higher at the time production is resumed than at the time output was discontinued. The distributive markups will add substantially to that figure. These higher prices will cut down buying demand considerably.

WPB policy on reconversion was recently summarized by Operations

Vice Chairman L. R. Boulware as follows:

"The most common conception of reconversion is that of all the companies in a given industry resuming production at a given time either at the rate prevailing in some nearly normal base period or at some given percentage of that rate. In the absence of other more compelling considerations, that is the policy. Every effort will be made to so influence cutbacks and cancellations that the plants of all the companies in a given industry and the plants of all their component makers and other suppliers, will be cleared equally for civilian production at the same time. This would result in the fairest treatment to owners, workers, distribution and service organizations, the individual communities involved, and the public."

ISSUANCE OF A UNIFORM CONTRACT TERMINATION CLAUSE to be incorporated into subcontracts is intended as a means to expedite settlement of both the prime and the subcontract.

The Uniform Termination Article for prime contracts was made effective January 8, and was primarily designed to set forth the conditions under which the Government procurement agencies would proceed in

terminating the contract.

Many of the provisions obviously were dependent upon settlement by the prime contractor with his suppliers. It was presumed that the prime would extend the same provisions to his supplier as were offered to

him, and the uniform article for termination of subcontracts virtually

duplicates the principles of the clause for primes.

The uniform subcontract clause was adopted by the Joint Contract Termination Board, consisting of the representatives of the War, Navy and Treasury Departments, Maritime Commission, Foreign Economic Administration, Reconstruction Finance Corporation, Smaller War Plants Corporation, War Producton Board, and the Attorney General.

These agencies will seek incorporation of the Article into all subcontracts of a war nature, and in such purchase orders as in effect

constitute war materials subcontracts.

General formula established under the subcontract clause (essentially identical with that for prime contract termination) is as follows:

Subcontractors are to receive the full contract price for all completed articles, but get nothing on the portion of the sub-contract on which work has not been begun and no costs incurred. On the portion of the subcontract that has been begun but not completed, the subcontractor is entitled to actual costs incurred that are properly allocable to the contract plus an allowance for profit that is not to exceed six percent of the whole of the costs.

The profit formula is broken down to provide for a two percent top profit for materials not processed, plus eight percent profit on the remainder of costs, but the aggregate not to exceed six percent of the

whole of costs.

This provides for the same six percent maximum profit limit as with

prime contracts.

The mere fact that this uniform article is inserted in a subcontract does not mean that it is a war subcontract or that it is properly part of a claim against the Government. In the settlement of the claims of prime contractors, subcontract claims are treated as an element of cost that must be properly allocable to the prime contract to be recognized by the Government.

WAR CONTRACTS PRICE ADJUSTMENT BOARD has issued Chapters three, four, five and six incorporating basic rules governing renegotiation of war

business done by contractors in fiscal years ending after June 30, 1943. The new chapters are as follows:

Chapter III, dealing with determination of renegotiable business and costs, consists of eight sections. The first discusses the method of renegotiating on an over-all company basis rather than a per contract basis, and cites certain authorized exceptions to this method. Section two covers the problems of segregating sales of contractors, those that are subject to renegotiation and those that are not. Contracts and subcontracts coming within the scope of the Renegotiation Act, mandatory exemptions and exclusions and permissive exemptions from renegotiating and time limitations for renegotiating are covered in Sections three through seven, while Section eight takes up the question of costs and their allocation as between renegotiable and non-renegotiable business.

Chapter IV deals with the determination and elimination of excessive profits, with special regard to principles and factors to be taken into account in determining excessive profits. This chapter also discusses methods of recovering excessive profits already realized and of preventing, through price reductions, excessive profits likely to be realized in the future. It closes with a section on adjusting re-

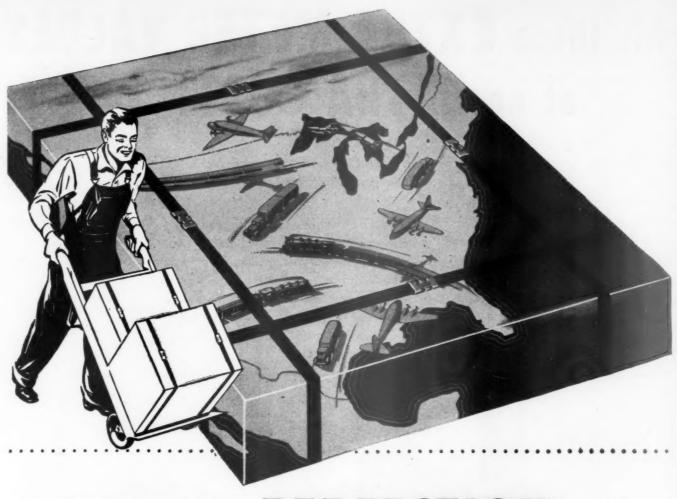
negotiation results for taxes.

Chapter V covers the form and content of agreements between the Government and contractors, clearances where no excessive profits appear and statements to be furnished to contractors upon their request under provisions of the new act.

Chapter IV, devoted to impasse procedure, likewise takes up proceedings for the redetermination of excessive profits by the Tax Court of the United States under powers conferred on that court by the new

Renegotiation Act.

The new chapters and revisions of chapters already issued were produced in the Federal Register of June 7. The U. S. Government Printing Office will publish all these rules in loose leaf form and make them available at a cost of \$2, which also covers 12 monthly supplements embodying such revisions as are made from time to time.



# MANUFACTURING PERFECTION NEEDS STEELSTRAP PROTECTION . . .

THE Acme Seal on shipping packs is a "Seal of Good Will." It marks a manufacturer who wants no "slips" when he ships ... wants to be sure his product is "Bound to Get There" ... whether it travels by land, by sea or by air. He realizes that "Manufacturing Perfection Needs Steelstrap Protection."

—And that protection pays in many ways... in shipping economies... saving in freight, reduction of pilferage and damage claims. — That's why the more a manufacturer values his reputation, the more certain he is to be sure his products are "Bound to Get There" with Acme Steelstrap.

DOC. STEELSTRAP is represented by Acme engineers—men whose business is the reinforcement of shipping packs—from single containers to car loads of freight.

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front, there is evidence of Doc's skill—on cases, cartons and crates, on bales and on skid loads—on materiel and supplies from Army and Navy depots, from arsenals and from war industry. Strap has a full-time war assignment, part of a job that Uncle Sam calls "pack it right to reach the fight."

It's the same job that we have always called making shipments "Bound to Get There." When his war work is finished, Doc. will be ready to discuss the possibilities of steel strapping reinforcements for your post-war business.



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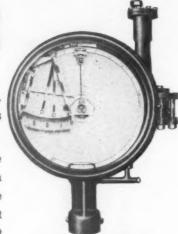
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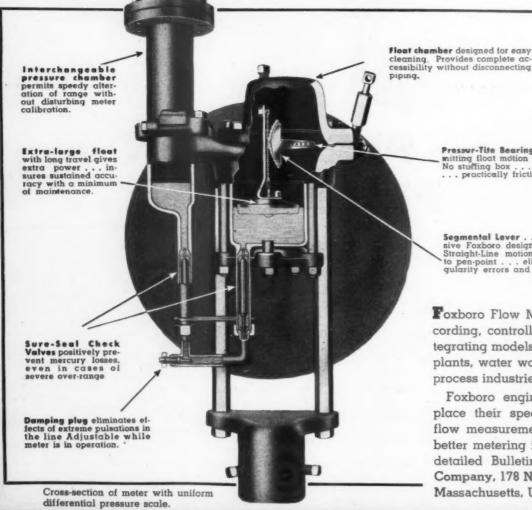
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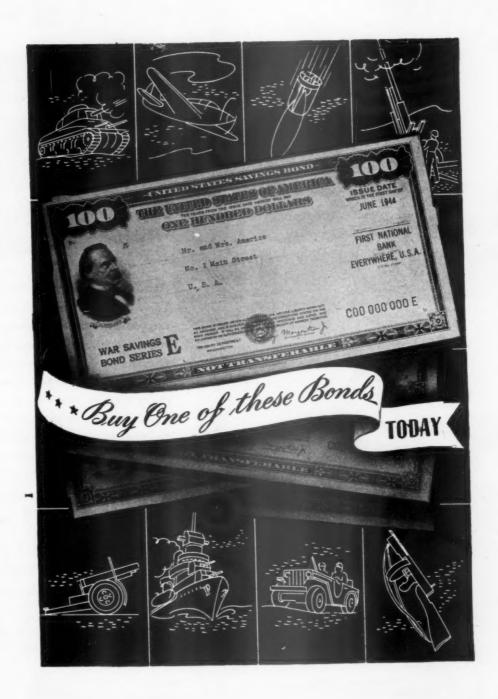
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Bay Manufacturing Division

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At bottom—Auto-Lite Air-tone Trumpet, straight projector type.

TUNE IN "EVERYTHING FOR THE BOYS"
TUESDAY NIGHTS-NBC NETWORK





This quaint wood cut was reproduced from the pages of the 1875 catalog of the Wiley & Russell Manufacturing Company, one of the parent companies of the Greenfield Tap & Die Corporation. It shows the "finest threading tools" of that time and the copy modestly states "it is warranted to do five times the work that can be done in the old way."

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duction staffs of every metalworking industry as they work on war and post-war products. The new catalog has been most carefully indexed and arranged for quick reference. Copies are available from your local "Greenfield" Distributor.



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# PURCHASING

JULY, 1944

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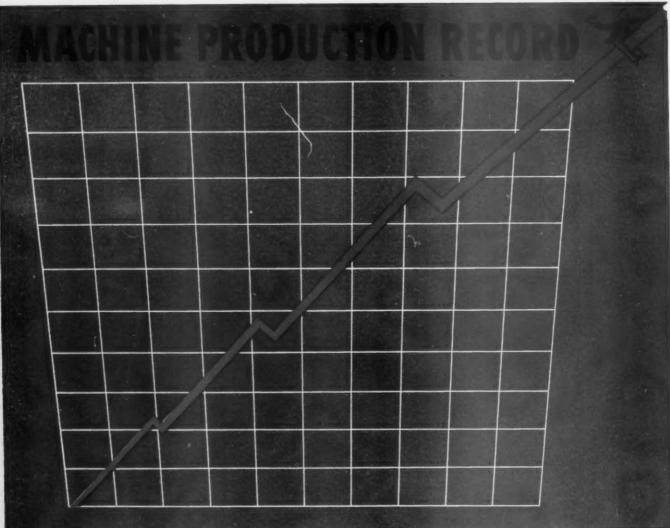
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### TURN OF THE TIDE

PURCHASING AGENTS are not generally given to prophecy. But in one important respect their job must be the very essence of foresight and appraisal of the uncertain future. For, unlike the professional forecasters, they are obliged to act upon their beliefs—to commit their companies, to the extent of more than half of every manufacturing dollar, on the basis of their judgment regarding things to come. The soundness of that judgment has been indelibly written into the nation's business history, in the record of purchasing policies and action under all sorts of economic situations.

So it is particularly significant when the President of the National Association of Purchasing Agents places the statement on public record, as the consensus of purchasing leaders, that the turning point from an economy of scarcity back to civilian production for the American way of life can be definitely expected in August or early September of this year.

This was the clear and confident keynote of a wartime conference on the eve of the great invasion. In succeeding sessions, government policy chiefs and administrators, economists, and capable industrialists discussed controls of prices and production, the problems of contract termination, reconversion, surplus materials and redistribution, and the still critical areas of our war production program. There can be little doubt that the more than two thousand industrial buyers who listened attentively through three crowded days of that discussion, were fitting that information and opinion into a time-table that scheduled the turn only two months distant.

There was another significant phrase in President Newbery's prediction. He spoke of the "long march back". For the turning point marks no abrupt change in business conditions; it is only a change in direction, the first stage in a new cycle. Prudent, constructive buying policies will have a lot to do with affirming that change, establishing the new course and the pace of recovery.

Time alone will prove the accuracy of this forecast. We are confident that it is well founded. Meanwhile, postwar planners—both in government and in industry—who may be looking over-optimistically for an overnight change in business conditions and psychology, or who may be overawed by the difficulties of the transition, will do well to give thoughtful consideration to this realistic prediction. For Purchasing Agents must do more than analyze and plan. They will back their judgment with action, and in the long view it is action that will give reality to any forecast.

Stuart F. Nemity



# When almost isnit enough

"Wheels down . . . hook down," the observer reports. Now the landing signal officer's gaze narrows as he watches the incoming plane. Arms aloft, he signals the pilot lower, seconds later motions an over-correction. At the last possible moment he waves the plane in and dives for the protection of his net. Bringing a fighter plane to a safe carrier landing is an exacting task—to be almost right isn't enough.

Nor is it enough for Columbia chemicals to be "almost right." As basic ingredients, as essential agents in the conversion of raw materials, or in intermediate and finishing processes, their part is vital in a host of products necessary in war and peace. Smooth, uninterrupted production and the maintenance of product standards are dependent on chemicals which conform to specifications.

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# COLUMBIA SPOTLIGHT

"ALLYMER" is the new trade name for the entire line of Allyl Resin Monomers formerly referred to as Columbia Resins. The same identifying numbers—C.R. 39, C.R. 149—will continue to be used to designate types of Allymer. The first bulletins of a series describing various types and phases of Allymer have already been released. Others will soon follow.



COLUMBIA'S patented process for the purification of diaphragm cell electrolytic Caustic Soda has been an important contribution to various industrial operations, notably in the manufacture of rayon. The use of this high quality 73% NaOH concentration is expanding—four commercial installations for its production having been made in different parts of the country. After the war, it is quite likely that this expansion will continue as other users take advantage of this high quality Liquid Caustic Soda.

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THE TRACTOR is virtually a symbol of the agricultural mechanization which is so important to the nation. And Columbia Calcium Chloride—that chemical of such varied usefulness—is helping to increase the efficiency of thousands of tractors. Those big tractor tires, when weighted with a Calcium Chloride solution, provide increased traction and smoother riding qualities. The "CCC" solution is as much as 25% heavier than plain water... is doubly valuable because it won't freeze, eliminating the necessity of draining tires in winter.



SALT, of inestimable value to mankind, has been significantly involved in the history of the world. The salt of Palmyra was an important element in the trade between the Syrian ports and the Persian Gulf. Other great salt deposits have been vital in the commerce which enabled many nations to rise to eminence. And today, at least 10 billion pounds are being used annually in the manufacture of chemicals that are helping to win the war. . . to stamp out the menace which threatens our civilization. Columbia salt deposits being converted into essential chemicals are an important factor in meeting these wartime requirements.



COLUMBIA CHEMICALS include Soda Ash, Caustic Soda, Sodium Bicarbonate, Liquid Chlorine, Silene EF (Hydrated Calcium Silicate), Calcium Chloride, Soda Briquettes, Modified Sodas, Caustic Ash, Phosflake, Calcene T (Precipitated Calcium Carbonate), and Calcium Hypochlorite.



### A brief summary of outstanding features of timely interest and importance in this issue, to conserve the time of busy readers



In the editorial pages of this issue is reported the meat of the 1944 Wartime Purchasing Conference of N.A.P.A., an event of outstanding significance to American industry. For at this meeting authoritative spokesmen from government, management and purchasing pre-

sented the policies which will guide industry through the critical days in which we shall wind up our wartime job and turn to the problems of readjustment and recovery. For the twenty-two hundred purchasing executives who attended the sessions, this report will serve as a permanent reference, and for the thousands who were unable to attend in person, here is a comprehensive summary of these important deliberations.

In the keynote address, on page 73, President Ben Newbery of N.A.P.A. fixes the **Turning Point in August.** The reasons for this prediction, and the responsibilities which it imposes on management and purchasing, are vitally important to every business executive.

No N.A.P.A. program is complete without a message from **George Renard.** His advice in this critical time is "Back to Fundamentals"—an analysis of the purchasing job that no buyer will want to miss. You'll find it on page 75. In addition there are important statements by **Donald Nelson** (page 74), **General Browning** (page 79), **Dr. Lewis Haney** (page 97), and others.

How Long Will Government Controls Last? The answer to this question in respect to materials is given in W. C. Skuce's paper on page 85; in respect to prices by J. F. Brownlee on page 78; in the light of world economic conditions by Dr. J. Anton de Haas on page 84; and from the standpoint of private enterprise by R. R. Wason on page 82. Get the overall picture from these authorities.

**Pricing Policies** are of particular interest to purchasing men. On page 87, Glen A. Lloyd sets forth the Army's position, Vincent Goubeau speaks for the Navy, and W. T. Roach discusses the practical problems of the industrial buyer. Then, on page 99, A. W. Zelomek, from the

economic and statistical viewpoint predicts that the reconversion period will bring a general price decline.

Critical shortages may still be expected in Fuel Oil, says J. W. Connolly on page 113. Containers of all

sorts will continue to be scarce (page 94) and the **Paper** situation (page 90) shows little chance for immediate improvement. H. N. McGill sums up the commodity markets in a keen analysis appearing on page 101, stressing the need for careful and informed purchasing of key materials in a highly selective market.

There's a **Brighter Outlook for Rubber**, as Dr. R. P. Dinsmore points out on page 91. And J. F. T. Berliner, on page 114, reports some remarkable **Technical Advances in Lumber** utilization, originating in the chemical industry. Summing up such developments in a broader view. Col. G. S. Brady discusses **Progress Through Substitution**. Turn to page 104.



**Surplus Materials** and their disposition promise to be one of the major headaches of the readjustment period, and are already a source of concern. Col. Woodlock, Col. Baxter, and Clifton Mack are among the men who are charged with the responsibility of administering the redistri-

bution program. On page 110, they explain the policies and the organization which has been set up to handle this problem, which is destined to grow to unprecedented proportions in the months ahead.

Practical and up-to-date information on the subject of **Contract Terminations** is presented in a series of three articles starting on page 105, S. F. Heinritz outlines the responsibilities of the purchasing department, E. N. Osterberg tells how his company has prepared in advance to handle terminations quickly and effectively, and W. B. Wight discusses the negotiation of settlements with suppliers.

There has been a lot of favorable comment on the **Forms Forum** which shows and describes tested methods of handling records and routine, factory and office forms that make for more efficient materials control. Several new forms are shown this month on page 229.

Don't overlook the regular departmental features—the timely **Washington Letter** on page 57, with its authoritative report and preview of official thinking on matters affecting industry, as gathered by our Washington office; the compilation of **Know-How Information**, that is yours for the asking, appearing on page 10; and the illustrated summary of **New Products and Ideas** now available for the industrial buyer (page 118), providing a quick and convenient means of keeping up to date on recent developments in industrial products.



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### THE TURNING POINT

### IN PURCHASING



By BEN R. NEWBERY
President, N.A.P.A.

ANY names and many places will be immortalized after this war. But history will give special significance to three; El Alamein, Stalingrad, Guadalcanal. What have they in common? The answer is plain. Each marked a major turning point in the war. Each marked the furthermost advance made by the enemy in that direction.

Somewhere in the tremendous struggle that has been going on between available supply and urgent demand, there will be one point, one certain month, or even one particular day when demand had run its course—when supply met the need; and the long march back to civilian production could get under way.

Has this day already passed? Is it here? Is it ahead of us? To try and fix that day now, I asked twenty well informed purchasing agents, representing approximately that many industries, to give me the exact date, which, in their opinion, the records would show marked the turning point in the availability of supply for civilian needs.

After adjusting for extremities and averages, the time when informed purchasing opinion expects material supplies to reach this turning point is August or September, 1944. Those reporting on the nature of the turn believe it will follow a broad curve. That means we are beginning to reach or scrape bottom.

The turn upward should start late this Summer.

Let us not assume, however that because informed purchasing executives believe a turning point is shortly due, that we can relax one minute in our efforts to make the most effective war use of our materials—that we can all run to the other side of the ship to wave "hello" to the Statue of Liberty. Instead, every one of us must remain at our post, must still give unstintedly of our time and of our co-operation to bring this war to a speedy and a victorious end.

Rommel was not defeated at El Alamein; he was only turned back. The decisive blow was not administered until long after Mateur and Tobruk. It took Tarawa, Boungainville, and the pounding of Rabaul to push the Japs out of all the South Pacific. Hitler's real defeat in Russia came at Kursk, when he tried his 1943 offensive and was hurled back. As purchasing agents of industry, as custodians of the vital materials of war, a responsibility placed on us by Donald Nelson last year, we must continue the practice of sacrifice and the exercise of sound judgment if we are to win freedom abroad and preserve it here. Surely it is not necessary to remind members of this group that if severe inflation or depression follows this war, freedom of enterprise as we know it in America will be lost for years to come, or lost forever. Materials now used for making the implements of war must be used, and used wisely, to provide jobs for millions of men anxious to return to their more normal pursuits of life.

#### Imaginative Realism

When the turn is made, when supply for peacetime production starts to increase, the impact on the business and economic history of this country will be as momentous as was the turn in the military tide. The forces of scarcity may give ground slowly at first, but they will not be able to hold against the mounting capacity to produce that lies in the machines, the manpower, and the desires of the people of America.

Industry will have more difficulties converting to peace than it experienced in converting to war. Instead of gathering together to march in a common cause, when the war is won we will break formation. Each industry will be out to strengthen its own position, each company will be out to capture lost customers.

Purchasing agents are expected to be realists. In the sense that we believe prices we pay should have some reasonable relationship to costs, we must remain realists. That is the foundation of the competitive system of American business. But in the sense that we see things only as they come before us, we must discard realism in buying and become the most imaginative men in industry. A new material, a different ingredient, will not only be growing on every bush, but will be lurking in every test tube.

lurking in every test tube.

Being factual on the one hand and imaginative on the other is a neat trick, and I believe we can do it. The key lies in four words—Keeping An Open Mind. Buying for industry has always required the weighing of evidence, the listening attitude, the summing up of advantages and disadvantages.

It is, I feel sure, the opinion of practically every one of the more than eight thousand members of the National Association of Purchasing Agents, that America can best serve the world by returning to, and maintaining, its system of free enterprise based on profits earned in competitive business. We can serve the consumer better by working for him than by dividing with him.

Now, if my twenty purchasing friends are right, the tide is also being turned in the struggle between demand and supply. It marks a turning point in purchasing—a point from which conditions should gradually grow better. It marks, too, a new era for purchasing, an era in which buyers for industry must depend more for success on the open mind than on prewar specifications. priorities, or preconceived policies. This period, too, calls for long hard work ahead, calls for continued cooperation with government war agencies and with each other.

### A BIG JOB AHEAD

By DONALD M. NELSON

Chairman, War Production Board

WHILE a tremendous job in war production still lies ahead of us, the War Production Board is not neglecting getting the machinery ready for the time when the turn in the war really comes, Donald M. Nelson, Chairman, War Production Board, declared at the opening session of the 28th Annual Convention and War Conference of the National Association of Purchasing Agents.

"Until the invasion is over, nobody can tell when the war will end. Tremendous military programs will have to be taken care of in the meantime. I have been somewhat disappointed that during the past three or four months we have just been missing our war production schedules by a little bit. The most important task at this time is to get these schedules up to date again," Mr. Nelson declared. "The latest war production report shows output 3% below the quotas; I would like to see output 3% above the

"Our problem has been further complicated by the fact that a new heavy artillery program recently had to be added to our other tasks. This has considerably tightened up our steel supply, and we have had to ask the steel industry to double its efforts in the third quarter. While most of the problems of materials have been successfully solved by now, the manpower shortage remains a very real one. Even this problem can be quickly licked, however, if everyone does his part. I don't like the dissention at all which is now coming up between industry and labor. Much more work could be done with less manpower if everyone works together," Mr. Nelson said.

"The manpower problem is most acute at this time in the forgings



and castings industry where much hard and dirty work has to be done. The situation is particularly critical in malleable castings since we must put out 3,000,000 engines for propulsion alone this year.

"Paper and lumber rank right along with forgings and castings and particularly the container problem is one of the worst today. We are trying to solve it primarily through an increase in supply but thus far have never been able to catch up. This makes it necessary to handle available supplies with the greatest of care

"The job to be done is still so tremendous that we must not let the whip lash of patriotism lose its force," Mr. Nelson pleaded. "We must not permit competition and competitive forces to tear us apart

"When the turn really comes, we will be ready at the War Production Board to see to it that the termination of war contracts is handled in an intelligent fashion. It is necessary to realize, however, that even after the German phase of the war is over, military production will still have to be large because our supply lines in the Pacific will be long.

"Terminations therefore must start where we need manpower for remaining war production most. The further improvement of military programs must come first. After that is done we will see to it, however, that we have the machinery ready for a speedy increase in civilian production, and I can assure you that we will then know where we are going," Mr. Nelson said.

Praising the job that has been done by the purchasing agents of the country to further the war effort, Mr.' Nelson closed with the reminder that purchasing still has a tremendous job to do, and expressed his confidence that purchasing men would continue to meet this challenge.

### A MESSAGE TO THE CONVENTION FROM THE COMMANDER-IN-CHIEF

"The maintenance of adequate balance between our war economy and civilian requirements has been a problem which we have all had to face during the war. Our war needs have come first, but home front essentials could not be neglected.

"The members of your Association have come to grips with this task each day and I think every consumer will testify that you have done well under difficult circumstances.

"It has been no easy thing to make scarce supplies go around and to obtain the materials necessary for our economy.

"There may be increasing difficulties in some lines before the war is over, but I am counting on the patriotic co-operation which your Association has shown in helping carry us through."

Very sincerely yours,

(Signed) FRANKLIN D. ROOSEVELT

### BACK TO FUNDAMENTALS

An appraisal of the purchasing man's function and responsibility as today becomes yesterday and time marches on to new tomorrows

A NY discussion of the job purchasing is facing must be an appraisal of fundamentals. In wartime, our normal values are reversed; destruction is our objective and wasteful and inefficient practices and processes are often used deliberately to increase production for destruction. No nation can operate successfully in peacetime with wartime policies and expenditures. No company can continue to operate in peacetime on its present basis; no purchasing department can sit smugly content, because a fine war job has been done.

The story is told of three men, on business of course, and in Washington, spending the evening together. The bill totaled \$80.00. The first gentleman claimed the privilege of paying the check, because his company was in the 50% tax bracket, making his net cost for that swell evening only \$40.00. One convivial friend protested that would never do; his company was in the 80% profit tax bracket, so the net for him was only \$16.00, or little more than \$5.00 a head. The third fellow said. "Wait a minute, we have a costplus contract, so don't be silly—if I pay that bill, we collect 10% profit on it.'

The story is an exaggeration, of course, and meant to be so, but it forcefully illustrates how our Government, our industrial organizations and our company officials and executives are going to be compelled to make adjustments in their thinking and practices, with the end of this war period of waste and destruction.

#### What Are the Fundamentals?

Purchasing has done a grand war job; get the materials and don't delay production has been the slogan. There have been no slowdowns or sitdowns, nor doubletime for overtime—but all that will soon become history. Priorities and red tape won't help purchasing operate in the period ahead. There will be no substitute for ability and experience as no synthetic management has



By GEORGE A. RENARD

Executive Secretary

National Association of Purchasing Agents

been developed. In the change of pace, purchasing executives, particularly, will have to make a severe adjustment. It can only be done by going back to fundamentals.

Purchasing agents are and must be men of character, basically honest —above the average. It is a position of trust, and a company would hardly keep a man in that position unless he earned that confidence.

Purchasing agents must also be fair-minded in all dealings—fair to others in business transactions. The character and reputation of the company are a responsibility of the purchasing department, one which cannot be avoided, for a company is known by the men it keeps to represent it in business transactions.

Ben Newbery and Roy Haberkern sat in our office last week and reminisced about their travels to all sections of United States and Canada; each had been very deeply impressed by the uniformly fine type of men *he* found in purchasing. That is only logical. Any other would be miscast. A company can hardly afford to put off-standard merchandise on display, and the purchasing department is the showcase where others see that company.

Some think the period ahead will be an era when public relations will be one of the most difficult and important problems of the business organization. The purchasing department is one of the company keystones of public relations. That is a fundamental which must not be overlooked.

To be honest and fair requires considerable analysis of materials and prices in most transactions and good business judgment to arrive at the right decision. I have been told that a business executive whose decisions are right more than half the time can be successful; if he can hit four out of five, he is a genius—a wonder. It would seem that a P.A. who is honest with himself and his company, and fair to others, has a good start on the road to success; that he is headed for failure if he lacks either.

With honesty and fair dealing as a foundation, ability to analyze and to use good business judgment can be improved continuously because there is no ceiling on their development and no limitation on their use.

In fact, materials and markets are constantly changing and the next ten years will challenge us to keep up with developments. The hide-bound or habit-chained purchasing agent will be a dangerous liability to his company.

#### Sound Business Judgment

We purchasing agents must call the play as we see it, not as we would like to see it, nor as someone wishes us to see it. Certainly, no P.A. can afford to have any obligation which prevents clear-cut impartial decisions in business transactions. We can materially reduce our batting average for making correct decisions if we allow personal preferences or outside factors to influence our judgment.

The president of one of our largest machinery manufacturing organizations told me several years ago, that the top qualification he wanted in his purchasing agent was sound impartial business judgment. He had many fine technical men in the organization and was a trained engineer himself-but he wanted something besides technical ability heading the purchasing department. His comment was, "if he has engineering training in addition to good business judgment, that is a perfect combination, but not too easily found. If I must choose between engineering ability and good business judgment in selecting the purchasing agent, I will take the man with business judgment. The technical divisions of the organization can furnish all the technical ability and information that is needed.'

The conversation straightened out my thinking on two points. First, there need be no conflict between the engineering and purchasing departments; they are just as complementary as ham and eggs. Each can make an important administrative contribution to the success of company operations, and working together they are a hard to beat combination

The other is the distinction between decisions requiring technical knowledge and experience and those requiring business knowledge and experience, trade practices, materials, markets, sources and prices. The purchasing and engineering departments must both make decisions and that means both must be qualified to make them. Therefore, it is just as necessary for the purchasing agent to keep qualified and informed as it is for the engineer to keep abreast of development in his profession. You can be a quack purchasing agent or a well qualified specialist and few companies will want quacks in the period ahead. Don't forget that the batting average for correct decisions in the purchasing department can be boosted by close co-operation with engineering, research and production. That is another fundamental.

#### The New Technology

We are facing new developments in the years ahead that will be amazing in their application. They can very easily become ruinous for some companies while rewarding others. The chemical transmutation of wood described at one of these meetings is an example. It means that soft woods can be made hard—made to have any color or finish; and that low grade wood can be transformed into high grades at a processing cost that is less than the increase in value resulting from the change.

It sounds miraculous, yet it is quite simple. Wood is celular—a perfect pattern filled with moisture. Remove the moisture and replace it with plastics or chemicals, and a new and different material results. It means that lumber can be made to order—to meet the requirement. It means that all former standards of lumber quality may soon become obsolete.

But we have been doing that with metals for many years. At one time we had only cast iron and wrought iron. Now we have cast or rolled steel to meet any requirement of strength, ductility, elasticity or machinability. We can get aluminum tailored to meet requirements, or bronze; yes, and paper, or textiles. There is no hocus-pocus magic in those developments, the elements not wanted are eliminated and others are inserted. The possibilities in that field of tailor-made materials are endless-and the possibilities of using them profitably are endless. At least, part of that responsibility rests in the purchasing department.

Think of the situation confronting us in the purchase of machinery and production equipment. If ordered now to get priority for postwar delivery, it is almost necessary to buy a pig in a poke. The price would have to be the one in effect at time of delivery-but more important-the machine would have to be the model or design being produced at time of delivery. We know that machinery manufacturers will bring much more efficient models out as quickly as possible; that is the only solution of their postwar problem. They will deliberately make the equipment of today obsolete; many machinery users will be compelled to purchase the present or older models to get into production in the transition and postwar periods, but the timing and extent of those purchases present a problem that will test business judgment as well as technical planning.

#### The New Geography

Will imported materials return to former price levels that were based on low labor costs? Will that cheap labor accept former conditions and wage standards? Will modern machinery and production processes be used in those formerly low wage areas—and reduce the cost of production and lower the former prices? Those are problems of the next few years that will confront purchasing.

The material geography of the world will surely be changed, and the manufacturing geography of our own country will never return to prewar. Anyone traveling in the South and West finds industrial developments which stagger the imagination.

We hear much about the use of historical quotas to maintain prewar competition in the transition and reconversion periods. That may be done for a brief period while labor

Continued on page 284





#### ROBERT C. SWANTON

ROBERT C. SWANTON, Purchasing Agent of the Winchester Repeating Arms Company, New Haven, Conn., has been elected President of the National Association of Purchasing Agents for 1944-1945. The announcement was made at the Banquet session of the Association's 29th Annual International Convention, held at The Waldorf-Astoria Hotel, New York City, May 30th. He succeeds Ben R. Newbery, Director of Purchases and Materials for the Lone Star Gas Company, Dallas, Texas.

A native of Binghamton, N. Y., where he was born on New Year's Day 54 years ago, Mr. Swanton has been associated with the Winchester organization since 1915. He came there from the Star Electric Company, Binghamton, as head of the cost accounting department, to install and direct a system for handling the war contracts with which the company was then engaged. Advancing rapidly, he became General Auditor of Winchester and its associated companies, and Vice President of the Winchester Retail Stores Company. In 1920 he was active in organizing the National Association of Cost Accountants, and served on its board of directors for the first two years. In this work he was associated with the late Major J. Lee Nicholson, who had been the Ordnance Department accountant on the Winchester contracts.

In 1926, he took charge of the purchasing department and has continued in that position ever since, heading a department of twenty persons, now engaged once more on a gigantic war contract program as the company is engaged 100% on government work. He has been an active member of the Connecticut Purchasing Agents Association, serving as President of the State organization in 1940, and for several years as New England Regional Chairman of the N.A.P.A. Coal Committee. He was elected to the National Executive Committee in 1943, as Vice President for the New England District, and was assigned the additional responsibility of Financial Officer for the Association.

In addition to his purchasing work, Mr. Swanton is Assistant Secretary and Assistant Treasurer of the Western Cartridge Company, parent company of the Winchester plant, director of the New Haven Chamber of Commerce, director of the First Federal Savings and Loan Association of New Haven, and a member of the Board of Governors of the Race Brook Country Club. He is a member of the Rotary Club, the Masonic fraternity, and the Episcopalian Church. His chief recreation is golf, playing in the 90's.

Purchasing, says Mr. Swanton, is the most interesting of industrial functions. The purchasing executive should never have an idle moment, for it is impossible to exhaust the opportunities and the need for learning about the materials he is called upon to buy. His own cost accounting experience has been extremely valuable in developing costconsciousness and control methods, but knowledge of materials is the basic essential for successful buying. And purchasing owes much of its increasing prestige and recognition by management and by the public to sound performance under the critical conditions of wartime emergency and controls.



# PRICE CONTROL IN TRANSITION

OPA favors the removal of price controls as soon as it is safe to do so, but the process must be selective and gradual

By J. F. BROWNLEE

Deputy Administrator

Office of Price Administration

THE Office of Price Administration will invite representatives of business in the very near future to discuss problems of reconversion

Reconversion pricing is one of the four main problems confronting OPA for the transition period. The other three are: (1) pricing of surplus government commodities; (2) the question of whether OPA's strict pricing standards will need to be modified somewhat for all commodities; and (3) the removal of price controls.

#### Dangers of Inflation

Inflationary pressures will be dangerous throughout the whole of the economy until there is a very substantial reduction of expenditures on war goods and an easing of the tight manpower situation. As long as the general inflationary situation is dangerous, I think we all agree that OPA must use strict pricing standards in all fields including the small amount of reconversion which is permitted during this period. Not until there is a very substantial cut in the war production program will the problem become acute as to whether the standards for pricing the products returning to the market through reconversion need to be more liberal than the standards of price increases used now.

Whether or not this would need substantially higher prices on the reconversion products than those prevailing two years ago, depends on many things which are not at present clear, such as the extent of reduction in current labor costs through replacement of inefficient labor, reduction of overtime payments, the extent of technological production improvements during the

war, the scale of operations and the prices of basic materials.

Business may be willing, indeed anxious, to reconvert at prices considered appropriate for the cost and demand situation ahead rather than at prices related to the abnormal costs prevailing at the start of reversion. Both business and OPA will be faced with the question: should there be a temporary bulge upward in prices on the returning products, to be followed later by sharp reductions in those prices, or should the initial prices be prices which will be stable for a considerable period? Some business opinion would evidently support the latter course, but we can encounter the view that reconversion will lag unless OPA first sets prices high enough to cover all the artificially high costs and immediately yield a good profit.

I wonder whether this is so, and I wonder whether the other course although it would involve prices that were tight for a period, might not be better for business in the long pull.

#### Removing Price Controls

On the problem of whether OPA strict pricing standards may have to be modified somewhat for all commodities, during the transition period, it is one thing to recognize that the expected level of profits is one of the most important factors that will determine the amount of business spending and hence the level of employment and production. It does not necessarily follow, however, that OPA's pricing standards in the transition period will exercise any considerable effect on the amount of business spending. Personally I doubt that any pricing measures of OPA will have any significance for any length of time after civilian production starts under competitive conditions.

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We are anxious to remove controls just as soon as it is safe to do so. But I do not believe it will be possible to make a chart or a plan for the order or timing of the selective removal of price controls. We cannot rely on the fact that prices in a given field have sagged away from the ceiling for a time. This is what happened at the end of 1918. The decision to remove control in a particular field must rest on an assured prediction, from the best knowledge available, that inflationary pressure in that field has not only subsided but will not reappear.

#### Pricing Surplus Items

Our general thinking on proper pricing of surplus commodities is easy to state. It seems to OPA desirable that disposal agencies should sell at as high a price as is consistent with the preservation of ceilings applicable to private buyers and to resellers of the commodities so purchased. This means that ceiling prices for government sales will approximate as closely as it is practicable the ceiling prices that would otherwise be applicable to private sellers of the same or virtually the same merchandise.

A new price regulation is now in preparation which will establish principles for the sale of surplus commodities by government agencies to replace the present temporary regulation. Working co-operatively with other agencies, I am confident that an effective system of ceiling control will be in operation before surplus sales become large in volume.



# PURCHASING FOR WAR PRODUCTION

Sound purchasing performance maintains production efficiency and safeguards our position for post-war competition

By BRIGADIER GENERAL ALBERT J. BROWNING, A.U.S.,

Director, Purchases Division, Army Service Forces



BECAUSE of the successful developments on all fronts some businessmen are beginning to believe that we have won the war already. As a result, many feel that the war no longer requires all of our best efforts and that we can afford to slacken up on our drives for war production. Indeed, some few people have fallen into the frame of mind that industry can begin to concentrate its attention on post-war problems.

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The size of our military requirements does not bear out any such comfortable assumptions. We have only nibbled at the edges of Hitler's fortress, and our real battles lie ahead of us. Therefore, we still have enormous requirements for equipping and maintaining a military machine which will do the job in the shortest time with a minimum loss of American lives.

Even a sketchy review of military requirements shows a growing demand for materiel. Although the military campaign and our brilliant production record has permitted many "cut-backs" of individual items, the total requirements show no sign of a decrease. Aircraft production requirements for 1944 are far greater than they were in 1943. At the same time, the various needs of the Army on other production fronts for this year are estimated to be one billion dollars more than

last year.

A look at the way in which a modern army "chews up" its materiel shows that these great requirements are realistic. In one day's bomber attack on Bremen and Vegesack, our planes dropped 2,500,000 pounds of bombs, fired 2,750,000 rounds of ammunition and burned more than 1,000,000 gallons of gasoline.

A single armored division uses more than 600 tons of ammunition and 78,000 pounds of food every day it is in action. During the last 48 days of the Tunisian campaign, 38,000,000 rounds of ammunition were fired by Allied troops.

The invasion is on everyone's mind. The striking drama of the first landing is a major point in many of our thoughts. With this attention on that first physical act, many find comfort in the pictures and stories of England as a warehouse for the greatest supply program-we have ever seen. However, this is not enough. The invasion will require not only the goods on hand, but also the materiel which is going through our manufacturing plant today.

Even in the most successful offensive actions, the loss of weapons and supplies is terrific. During the 38-day Sicilian campaign, despite the relatively small size of the opposing force, we lost 13% of all the 155 mm. howitzers we landed; 45% of all our 57 mm. guns put into action; 54% of all the carriages for 37 mm. guns and 36% of the motor carriages for 75 mm.

The total needs of war go much further than guns, tanks, planes and ammunition. Even the requirements for material which is not regarded as primarily military are increasing by leaps and bounds. For example, we need approximately 12 billion linear yards of cotton goods this year for Army, Navy, Lend-Lease and essential civilian use. This compares with an output of 10,700,000,000,000 yards last year.

The reports of "cut-backs" have led many to believe that the total volume of production for which prime contractors will be responsible will decline in the near future. However, the present undelivered value of War Department prime contracts amounts to over 38 billion dollars. Industry will have to carry out a very large procurement program of its own in order to fill these orders. In addition new procurements will continue in order to meet the requirements of a continuing war.

#### Close Pricing

The 1943 Revenue Act provides that renegotiation will expire at the end of 1944 unless the President extends its operation for six months. This means that statutory renegotiation will no longer be available as a backstop to prevent excessive profits. Therefore, by the end of the year the War Department and business must perfect their pricing operations in order to provide a substitute for the earlier operations of the renegotiation act.

While we still have it, we can use the renegotiation law to help us to strengthen pricing operations. The Price Adjustment Boards and Sections are planning to work more closely with our procurement personnel in using comparative prices and costs in order to give greater weight to efficiency, cost savings, and production accomplishments. A company with a better record for production and close pricing will be given a higher profit. On the other hand, a company which displays a consistent policy of keeping very safe margins in its prices will not be considered as one which is entitled to a reward for taking risks.

Another means of preparing for the expiration of the law will be to grant exemptions from renegotiation on contracts which provide for really close prices. This exemption power will be tied up with an overall company pricing program, which will provide a procedure for exempting most or all of a company's business from renegotiation if the company shows that it is doing a

good pricing job.

The Army's drive for close pricing is closely related to usual purchasing methods. We are endeavoring to secure close prices through adequate negotiations—negotiations with sufficient information on the table to avoid arbitrary action on the part of both parties. That means that the emphasis is on getting a good price on a sound business basis.

#### Protecting the Contractor

At the present time there are three important elements of cost, the control of which does not rest entirely with the contractor: wage rates, prices for raw materials and volume

of production.

The contractor can be protected against the development of one or more of these contingencies in two ways. He can try to guess the amount of protection he will need and include contingency factors in the price when he quotes it. This type of industrial crystal gazing is not fair to either the contractor or to the taxpayers. It is almost certain to make war production cost more than it should.

The other, and to our mind the more sensible method of protecting the contractor, is for the Government to assume fully the responsibility for those increases in cost over which the contractor has no control. At the same time, the aims of the pricing program require that the contractor carry the usual risks of inefficiency.

The War Department is carrying out this policy through the use of long-term contracts under which prices are reset on a short-term basis. We now have two provisions for this purpose in the Procurement Regulations. One provides for setting future prices at the beginning of several stated periods, each a few months long. The second provides for adjusting the prices retroactively at the end of the first period and for setting future prices, only for succeeding periods.

Although we have had some success with these provisions, they have not been as popular as we had hoped. Therefore, we are supplementing them with a new provision which is more flexible in operation.

Unlike our earlier clauses which provided for a renegotiation of the price at stated intervals and on the basis of a careful study of all the costs of manufacture, this new article gives both the contractor and the Government the right to negotiate a new price under the contract at any time on the basis of a written request for such price revision and supported by a statement of the reason why such a refixing of the price is believed necessary. Nor does it call for any exhaustive accounting analysis, but rather states simply that the new price shall be fixed by negotiation in the same manner and on the same basic principles which governed fixing of the original price. In short, it makes possible an adjustment of price to restore as nearly as possible the intent of both parties which existed when the original price was set.

The purpose of close pricing is not merely to control profits, but to develop sufficient incentives for cost

reductions.

The Army can do only part of the job of meeting the objectives of the close pricing program. Industrial purchasing agents will have to carry out the same type of program so that in a cooperative drive we can help to lower prices, increase efficiencies, and handle the profit problem sensibly. The success of the Government's control over inflation in the past has depended in considerable degree upon business realization of the dangers of inflation and upon active cooperation. The future controls may depend even more upon that cooperation. At that point the nation's purchasing agents play a most important role. You can, by contributing to an overall pricing program, make a major contribution to the national effort on the home front to guard against the inflationary dangers.

#### Post-war Efficiency

An overall concern of a great many people in industry is the realization that increased efficiency in their own companies is the best key to their post-war problems. The far-sighted company is more concerned about its post-war position than about war profits. A company which comes out of the war with money in the bank and inefficiency in the plant will not be in a good competitive position.

This same interest of the individual company extends to the economy generally. If we come out of the war with low costs and great efficiency, we should be in an excellent position to improve post-war production. Conversely, finishing the war with a heritage of careless operations and high costs cannot fail to hurt our post-war economy. Our best post-war planning is to do an efficient job right now.

Because of all of the factors which we have discussed—the outlook for war production, the developments in the War Department's purchasing, and the changes in attitude about pricing — the purchasing agent's job is more important today than ever. You, as a group, occupy one of the most strategic positions in both our war-time pricing and production and our post-war opera-

tions









# of the NATIONAL ASSOCIATION OF PURCHASING AGENTS 1944 - 1945

Seated-left to right:

George C. Mercer, P. R. Mallory & Co., Inc., Indianapolis, Ind. Vice President for District 4: Central Michigan, Detroit, Fort Wayne, Grand Rapids, Indianapolis, Kalamazoo, Saginaw Valley, and South Bend Associations.

Ben R. Newbery, Lone Star Gas Co., Dallas, Texas. Past President.

R. C. Swanton, Winchester Repeating Arms Co., New Haven, Conn. President.

Charles L. Sheldon, Hood Rubber Co., Watertown, Mass. Vice President for District 9: Connecticut, New England, Rhode Island, and Western Massachusetts Associations.

C. M. Oberling. National Lock Co., Rockford, I!l. Vice President for District 3: Chicago, Denver, Kansas City, Milwaukee, Rock River Valley, St. Louis,



Tri-City, Twin City, and Twin Ports Associations.

Standing-left to right:

Carl Wuerpel, Community Public Service Co., Fort Worth, Texas Vice President for District 2: Dallas, Fort Worth, Houston, Oklahoma City, Tampico, Texas Panhandle, and Tulsa Associations.

Lee R. Forker, Quaker State Oil Refining Corp., Oil City, Penna. Vice President for District 6: Akron, Canton & Eastern Ohio, Cincinnati, Cleveland, Columbus, Dayton, Northwestern Pennsylvania, Pittsburgh, Springfield, Toledo, and Tri-State Associations.

George H. Cole, Alabama Power Co., Birmingham, Ala. Vice President for District 7: Atlanta, Birmingham, Chattanooga, Louisville, Memphis, and New Orleans Associations.

George S. Drury. Northwest Lead Co., Seattle, Wash. Vice President for District 1: British Columbia, Los Angeles, Northern California, Oregon, Utah, and Washington Associations.

E. P. Scully, Engineering & Research Corp., Riverdale, Maryland. Vice President for District 8: Baltimore, Buffalo, Carolinas-Virginia, Eastern New York, Elmira, Lehigh Valley, New York, Philadelphia, Reading, Rochester, Syracuse & Central New York, and Washington (D.C.) Associations.

Julian G. Davies, N. Slater Co., Ltd., Hamilton, Ontario, Canada. Vice President for District 5: Essex-Kent, Hamilton, Montreal, Toronto, and Winnipeg Associations.

### CONTROLS - HOW LONG?

Enterprise and capital must be free to create jobs, income, opportunity

#### By ROBERT R. WASON,

President, Manning, Maxwell & Moore, Inc.

GOVERNMENTS are manmade. They derive their power from the consent of the governed. When government buys its power with prodigal gifts in exchange for controls at the expense of the thrifty, it endangers every citizen of us. Some may not see the danger because of the benefits obtained. Some may lack historical understanding of bread and circuses.

Few Americans recognize the statism that was created, the liberties that were lost through Government controls in the past eleven years, peace and war. Most of us are only confused in our thinking.

The colonists thought clearly. They wrote a Constitution limiting the powers of Government. The people must restore those limits if we are to be free. Thomas Jefferson answered the question—How long should we be faced with Government controls?—when he said, "My reading of history convinces me that most bad government has grown out of too much government."

Conscription, manpower controls and food rationing should end when hostilities cease. Salary and wage controls should be consolidated. Both should be extended at present levels to retard inflation. They should end with the war.

You are aware that conscription, manpower control and food rationing are advocated in Washington for peacetime. Some advocate continuance of these controls to assist orderly demobilization and reconversion; others want these controls over you to assist a suggested new world order; still others would keep these controls over you to further socialize America.

Massachusetts has forgotten the failure of the communistic ideas the Pilgrims brought to Plymouth Rock. Massachusetts has forgotten John Bradford, who, when communism had failed, required each colonist to plant and raise his own corn. His action was their survival. Virginia has forgotten Captain John Smith who said, "He who will not work, neither shall he eat." But his action made Virginia possible.

Cavalier and Puritan alike learned that there was nothing to divide until after it had been created. Now, for eleven years past, we have lived on the savings accumulated in the years from Jamestown and Plymouth Rock to the 1930's. The lessons taught by John Smith and John Bradford can help us now.

All America forgets that this nation is only the wilderness they and other colonists found, plus the sum of the savings of all the people from Jamestown and Plymouth Rock up to now. Our agriculture, our industry, our inventions, our wealth out of mines and wells and forests were created by men at work, by opportunity, not by social security.

#### American Opportunity

After 160 years under English rule, the colonists rebelled against bureaucratic controls and taxation without representation. When free, they adopted a Constitution limiting the powers of the Government. Entitled under it to the products of their own labors, they created this greatest of all nations.

Most of you trace your ancestry back to European stock of fairly recent arrival on these shores. The sole difference that made America great was freedom from controls here that were imposed on your ancestors in Europe. Your own generation grew to manhood assured that opportunity would come to each of us; that it had no ceilings; that your abilities could be expressed and our efforts rewarded.

When you were old enough, you sought and found a job. You had complete freedom to take it and move on when better opportunity offered. There were no forms to fill out, no records to file, and what you earned came to you without deductions. In your home town, you watched men start with nothing and express their individual abilities in a small shop or store or contracting business, or other enterprise. You watched them husband their savings, give jobs to others, and expand their usefulness to the community and the nation.

In the past decade, you saw the most profound changes ever recorded in American history. The depression, which reached bottom in 1932, was used as justification for Government controls. Reforms at the cost of our savings prevented the depression from being liquidated.

Control is a necessary factor of management and progress. The family head is a control. The officers of a business are its control. All team work is a form of control. Partners exercise control by mutual concessions. When the Government interferes, there is no partnership. There can be no team work because the Government is master; the people are controlled. It is more complete than military control because it is less competent. No private argues with his sergeant. None of you argue with the laws that control you.

War has brought additional controls with which every citizen complies. No objection is offered to any of them while the war continues. This discussion pertains to postwar controls.

#### Price Controls

Price controls instituted by Government to distribute available goods and available production reduce both supply and production. Under the fixed or lowered ceilings, marginal producers must pass out of existence. Their production is deducted from the available supply.

Price controls create scarcity when plenty is needed. To make Government controls effective, more controls must be added. Stabilization Director Vinson demonstrated this fact with his directive requiring the manufacture of cheap textiles. The disappearance of low-priced goods that occurred in textiles happened in most other controlled industries, if less visibly.

The total result of price controls and minimum prices through time is a deduction from the net production of the nation in billions of dollars. This reduction in wartime comes when the nation struggles to increase the amount of available goods. This decline in production

of goods is offset by increases in the volume of money and debt.

The increased volume of money dilutes the real wages and earnings of the people by the increased scarcity of goods. It is the needed production of goods that minimum prices prevent.

#### Tax Controls

Until the war, most Americans were unfamiliar with the heavy hand of taxes because they had not paid them. As late as 1940, 95% of the people paid no Federal Income Tax.

The nation was shocked when the cabaret tax control of 30% drove investments in cabarets out of business and thousands of performers out of work in thirty days' time. Cabaret investors learned that people would not pay the regular costs plus 30%. Revenue out of taxes diminished instead of increasing. Because it affected audiences of millions of people and because it showed, as in a goldfish bowl how taxes operate to control investment, the public was impressed and indignant.

Exactly the same condition restricted other investments in the thirties. As taxes were raised year after year, investors withdrew funds, and jobs became unavailable. The public interest in the investments that gave them jobs in the thirties was less acute than their interest in investments that gave them entertainment.

The capital gains tax enacted in 1916 caused investors in the twenties to hold their securities when rising in value rather than sell them and pay the tax. Their action accelerated the depression.

Now under the capital gains tax, when a piece of land or a store or a home or a security is sold, the first cut is taken by the Government. Therefore, real estate and security prices remain low and the jobs that the turnover of these investments would otherwise create, are prevented.

Ours is the only sovereign nation in the world that regards capital gains as income. Probably no single tax device in history has cost this nation so much in lost employment and created so little in tax benefit as this capital gains tax.

#### **Excess Profits**

Industry's greatest burden, however, is the normal tax of 24% plus the surtax of 16% plus the excess profits tax of 95% enacted in 1943.

The war required you to expand your operations. The excess profits tax reduced your opportunity to finance the expansion. Your accumulated surpluses have been invested in brick and mortar. Money has been borrowed from the Government by many of your companies. Defense Plant Corporation has loaned money to others of you. Every corporation represented in this room is gorged with war business and distended with the pains of indigestion. Your anxiety is for a return to a normal diet of business that can be digested by the money you own, apart from the money you owe.

When war orders have ceased, cancellations have been completed, inventories have been reduced, and after industry has collected its postwar credit, if any, and made its claims for adjusted taxes to offset postwar losses, it will be back on the level of 1939. In that year, in general, the tax rate for most companies was 19%. Those with earnings in higher brackets paid also a surtax at rates from 6% to 12%.

Excess profits taxes have prevented you from protecting your

postwar solvency by prohibiting appropriate reserves. Price Adjustment Boards in renegotiation have washed out much of your postwar credit. Whatever part remains is a deferred asset.

Except the excess profits tax of 95% be removed in its entirety when the war has ended, a high level of employment cannot be maintained in industry. Except industry supply employment, fair prices cannot be maintained in agriculture.

If the excess profits tax remains and the patriotic incentive of war has passed, venture capital will continue its hibernation in tax-exempt bonds, in Government 2%'s, in safe deposit boxes, and in accumulated savings accounts. If the Government program of "make work" results in further increases of the debt, money will hide in land and commodity purchases, in flight from shrinkage in value of the dollar. Therefore, control should be placed on the expansion of debt and the expansion of the currency. Control should be removed from all production to increase employment.

The greatest contribution that American industry can give to the postwar period is its solvency. Except you remain solvent, your employees will be fewer or none and the burden of all will be upon those of you who remain solvent.

#### Venture Capital

Savings result from your decision to postpone the enjoyment of your earnings. The investment of these savings is the only way to create jobs that has been found under our economy. Government jobs are created at the expense of the savings of our people taken in taxes. When taxes absorb savings, they impair solvency, reduce jobs, and create unemployment.







Everywhere in our economy, risk accompanies gain. The structural steel worker receives a high wage which is payment for his risk of life and limb as well as for his labor. Government bonds that carry least risk earn lowest interest.

Venture capital speculates on possible profits to be made. Investment capital invests when the gain to be made may be small or non-

existent. The principal must be saved. Money is ever timid. Restrictions on the possibility of gains, whether they be minimum wages, union contracts with the coercive power of Government behind them, or interferences by a variety of Government bureaus, keep savings idle. These fears and the fear also of new additional taxes virtually extinguished venture capital in the

1930's. Investment capital moved into Government securities.

All of us are aware that it was venture capital and not investment capital that built America. Venture capital started the company you represent here. It was not an investment until venture capital had created it. Venture capital built our railroads. Venture capital fol-

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### THIS SCRAMBLED WORLD



Government controls will be necessary in the handling of international trade throughout the period of readjustment

By DR. J. ANTON de HAAS

HILE our businessmen are fed up with government control, and it is understandable that they should hope for the date to come when once again they will be able to direct their affairs without preference to government bureaus, it seems most unlikely that a so-called free competitive system can be established soon after hostilities cease, J. Anton de Haas, William Ziegler Professor of International Relationships, Harvard University, Graduate School of Business Administration, warned purchasing agents at the Annual Banquet of this year's Convention and War Conference.

"Nor is it likely that it would be to the best interests of business to close down government control immediately," Professor he Haas said. "If we are to avoid confusion and dislocation of industry, the process of industrial demobilization must take place according to a carefully worked out and Government-controlled plan."

Discussing the problems that will arise in the early years following the war, the speaker stressed that the enormous accumulation of potential and actual purchasing power in this country as well as abroad, may induce factories to enlarge their productive capacity and will stimulate others to enter new fields. "This may well mean that under the stimulus of 'catch up economy' productive capacity of many lines will increase far beyond the needs of a more stabilized economic life. Once the vacuum created by the war has been filled, far less productive capacity will be needed than during the first hectic postwar years. If this overexpansion should indeed take place, then we may well face a period of industrial decline after the initial boom is over. It is difficult to see how such a development can be prevented. Surely it cannot be prevented under what some like to call the free competitive system.'

Turning to the international situation, Professor de Haas said that "The foreign demand will aggrevate the situation and will be particularly disturbing because it will in all probability be for some time concentrated upon a comparatively small range of products." He estimated that the countries of the Continent will probably have about ten billion dollars in liquid assets available to them in this country when the war ends. In addition the Latin American countries have now accumulated bank balances in this country of approximately three billion dollars. These Latin American neighbors of ours never were in a better financial position than they are today,' Professor de Haas said.

"The countries that have suffered most and have the smallest amount of available foreign exchange will need to receive special concessions if they are not to see their more fortunate allies outstrip them in the reconstruction period," the speaker warned. "Consideration such as these, coupled with the economic necessity of dovetailing the foreign demand to the domestic demand will make international rationing necessarv. Unless some scheme is developed to bring about a planned allotment of supplies and equipment, we shall face chaos in the world and at home, we shall expand our production in the direction of products for which there will be a rapidly diminishing demand after the first period of rebuilding is past.'

Much of the buying on the part of the countries of Europe, will for some time to come be under strict government control or in the hands of Government agencies. Very little opportunity will exist to dispose of goods in the countries of the continent, except with the approval and the co-operation of the governments concerned. All this does not look like a world in which we can decide how we shall do business abroad. Most of the decisions will be made by others.

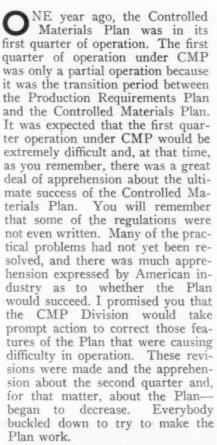
"Many voices are raised demanding that we return at the earliest possible moment to a free competitive system. I am all in favor of it. But I for one cannot see how in the near future it will be possible for us to abandon our Government controls," Professor de Haas concluded.

# CONTROL OF MATERIALS

The Controlled Materials Plan has proved highly successful, and is flexible enough to meet changing conditions as long as any measure of control is deemed necessary

By WALTER C. SKUCE

Director, Controlled Materials Division, War Production Board



A central control over war production to be effective has to be based on sound principles. It must be practical of operation, and contain sufficient flexibility. Furthermore, a central control requires close cooperation between industry and Government to make it most effective.

In the development of the Controlled Materials Plan many changes have been made to make the Plan most practical of operation and to incorporate practical considerations to lessen the burden of a central control upon industry. When sufficient

data had been secured from the early operation under the Plan so that the requirements for certain uses were clearly established, quota provisions were applied to eliminate numerous applications previously required under the Plan.

During this development period, the War Production Board adopted the policy of decentralizing applications. To the greatest degree consistent with this policy, the bulk of the applications under the Controlled Materials Plan was decentralized to be handled by the Regional Offices of the War Production Board, thereby placing the point of contact between industry and the War Production Board in close proximity to the applicant's location. In all of our activities serious consideration is given to handle War Production Board matters in the regions so that the local offices of the War Production Board, who are in close contact with the areas in which they serve, will be in a position to render substantial service to industry in a convenient manner.

#### Steel, Copper, Aluminum

In the development of the Controlled Materials Plan it has been our policy to make all of our interpretations of CMP Regulations a matter of public record so that all concerned would have the advantage of being guided by the interpretations to our regulations.

Throughout the development in CMP the basic principles have never been changed. These basic principles are:

(1) Realistic programs carefully laid out by the War Agencies which can be met with the available amount of materials and facilities, and



(2) The proper flow of materials and products so that these programs will be met on schedule.

In determining programs that are doable within the available supply of materials and facilities, steel, copper and aluminum have been used as common denominators. It is well to understand, however, that the consideration of the size of the proposed program, while at first dependent upon the available supply of steel, copper and aluminum, is also dependent upon the other materials and components which enter into the particular program. As you know, an authorization under the Controlled Materials Plan gives the manufacturer an allotment of steel, copper and aluminum and a preference rating to aid him in obtaining other materials and components to carry out his authorized schedule. The War Production Board, therefore, has a further obligation in the control of other materials and parts related to a given authorized schedule to be sure that a program first based on steel, copper and aluminum will be doable in the light of any other more restrictive item.

Question has been raised on several occasions as to whether steel, copper and aluminum would continue to be controlled materials if the supply of any one of them became abundant, or if other materials commonly used, because tight in supply, would be added to the three controlled materials now used in the Plan. Since steel, copper and aluminum are used as common denominators in the fashion that I have described, it is not our intention to drop any one of them or to add any new materials to the three now being used for CMP purposes. Ob-

viously, any additions of new materials might require new bills of materials and a substantial amount of additional work, which we feel would not contribute anything to the effectiveness of the Plan. On the other hand, if steel, copper or aluminum were dropped, the major production programs of the country would not be properly covered since these three materials are most common to all of our programs.

Under the Controlled Materials Plan a preference rating is given for the procurement of other materials and components. It has been found that when a given material or product is in critically short supply, preference ratings alone do not suffice to assure adequate supply and flow. Consequently, allocation orders or scheduling orders have been required to tie-in the flow of materials and components with authorized schedules under CMP.

General Scheduling Order M-293 for critical components has likely been one of the most controversial of the controls. It has done a good job. At first, the paperwork was quite complicated. Much of this difficulty has been eliminated by revisions in the scheduling order which reduces the paperwork by a

substantial degree.

Many manufacturers operating under the CMP have felt that the auxiliary controls over other materials required to fill an authorized schedule under CMP were unduly complicated and were not closely enough related to the Controlled Materials Plan. Starting last No-vember, a study was made of all applications under other orders of the War Production Board to make them complementary to CMP to eliminate all of the applications that could be disposed of because of the overall controlling feature of CMP. As a result of this operation about 40% of the application forms previously received in Washington have been eliminated and the other orders and regulations have been made to tie-in more closely to the basic pattern that CMP establishes.

#### A Successful Record

Today the Controlled Materials Plan is doing all that could be expected of a system of central control. During the past year the increase in the production of end products has been of substantially greater percentage than the corresponding increase in the controlled materials that were used as a basis for determining programs. Comparing the fourth quarter of 1943 with the fourth quarter of 1942, the quarterly production of airplanes of all types increased 80%. The quarterly delivery of dead weight tonnage of merchant vessels increased 81%. Combatant shipping production increased 25%. During this same period, aluminum supply increased 36%; copper increased 5%; carbon steel increased 7%, while the supply of alloy steel decreased 21%.

It is quite significant from the comparison of the percentage changes in the available supply of these basic raw materials with the percentage changes in the output of finished products that the increased production was in no small measure due to a better programming and control of production through the efforts of industry and Government.

#### Looking Ahead

We are in the process of authorizing production schedules and making allotments of controlled materials for the third quarter of 1944. In matching the program requirements against supply for the third quarter of 1944, we have insufficient material in supply to meet military and essential civilian needs and have had to cut back many important requirements in order to bring demand and supply in balance. Much of the optimism that was expressed at the turn of the year is not borne out by the current demands of our third quarter requirements for military and essen-

ial civilian programs.

One of the biggest problems with which we are faced today is the shortage of forest products, which were previously considered to be in such plentiful supply. The heavy demand for overseas shipment to our many theatres of war have so increased the demand for forest products that an acute shortage has developed which is felt through all areas of forest products and is particularly serious from a packaging and shipping container standpoint. Controls have been, and are being, prepared to allocate this material to meet the essential needs of authorized programs so that all permitted production may be packaged. This does not mean that all permitted production will be packaged in the way in which we have been accustomed, but adequate production levels will be maintained and products will be adequately packaged to assure their safe shipment.

We have no new plan in prospect. We feel that so long as there is need for a central control, the Controlled Materials Plan has the proper basic principles and is practically operative. Unless there are compelling reasons for changes which are brought about by changes in military requirements; by need for increased consideration of manpower, or in the authorization of production to stabilize employment as military demands decrease, and to meet the problems brought about by contract termination, no other changes are

indicated.





### USEFUL PRICING METHODS

#### By GLEN A. LLOYD

Assistant Director, Purchases Division, Army Service Forces

RICING in war contracts has assumed a place of considerable interest and importance in the supply program. This did not come about merely because it is a way to reduce profits, control inflation or reduce money costs of the war, although any one of these reasons would justify a well-thought-out pricing program. The main value is to be found in the influence of prices upon the control of unit costs and upon production methods. Hard headed economists have pointed out that the price structure is the nucleus of the capitalistic system.

This influence is so vital to the production needs of the war as well as to the postwar position of contractors that it is difficult to understand the confusion which has sometimes existed in both the Government and in industry as to what the program ought to be. An understanding that pricing is a production problem and primarily an accounting, legal or financial one lays out the course for both pricing objectives and methods. It removes the program from a super technical as well as from a chiseling category, puts it on a business basis, lays the foundation for sound relations between buyer and seller, and indicates the importance of the part which the industrial purchasing agent must play in the supply program. Your job of harmonizing what is needed in the plant with what is available in the market and doing so with speed and in a manner which maintains the quantity of end items, while at the same time making the best use of what is available in the market, is not a small responsibility in the kind of production program which will shorten the war and save lives.

#### Profits and Production

Someone recently said that we must choose between buying on the basis of profits and on the basis of competitive prices. Our answer to that was that the choice was made when our present program was adopted. Buying primarily on the basis of a company's profit may lead to rewarding inefficiency. It means

removing normal pressures on costs and incentives for better methods. Such a procedure could serve only to reduce war production and increase prices in the long run. And that is precisely what we want to avoid. Neither of these two extremes in the pricing of war goods, therefore, fills the bill. Price analysis points the way to the development of practical standards which enable us to come closer to a true concept of values and this program, if well applied, does fill the bill.

#### Five Techniques

The following five specific techniques used in the negotiation of fair and reasonable prices illustrate the standards used in arriving at this concept of values:

The first covers an understanding of price factors. These consist mainly in understanding and weighing such factors as specifications, size of the order, delivery schedules, Government-furnished materials and facilities, financing provisions, and royalties. Good judgment on what prices ought to be is impossible without consideration of these factors.

The second is a skillful use of comparative prices and price trends. Due perhaps to the apparent simplicity and long use of this procedure in buying, some of its value have often been overlooked. Another reason why it has not always been fully used is that comparisons are full of tricks. Frequently two items bearing the same specification number will have differences in materials and in design. This means that an engineering and business evaluation must be made of the differences in order to improve validity of the comparison. Another useful method is to compare the price changes of one contractor with those of another for the same or a similar item. Thus, even though prices are at different levels, experience in manufacturing should result in price reductions or increases by all contractors and the rate of change should be similar. For example, if the price trend of 50 caliber machine guns is sharply downward, a careful examination should be made if prices for 30 caliber machine guns are increasing.

The third technique is a proper use of cost analysis. In the absence of competition, it is often necessary to go beyond the analysis of comparisons in order to understand a price. If items purchased under several contracts may not be exactly comparable, an evaluation of the differences may be needed to judge the reasonableness of the price. In many cases it may be necessary to pay a higher price to one contractor because he is compelled to utilize high cost operations which cannot be replaced. In other cases, the procurement calls for a completely new item for which there is no comparable price.

In this setting the analyst must go far beyond an accounting analysis of profits. He must look into the factors affecting costs and the basis for their evalution. He must look into the possibilities of reducing costs by efficient production methods. He must consider the influence of the prices paid on future costs and production.

#### Seeking Values

The forward look at costs cannot be applied mechanically. Cost estimates for forward pricing require business evaluation. The examina-tion of costs cannot be based upon either of the theoretical extremes of cost estimating. On the one hand, there is little to be gained from a complete cost accounting which follows through on all of the elements of costs for each individual part going into the final product. On the other hand, it is impractical to estimate the cost of producing an item by the simple method of hefting it and looking it over. The cost analysis which our policy now requires in this field is based upon a practical effort to evaluate the particular problems which face the contractor and the price analyst.

The fourth point is, the analysis of contract clauses as an important factor in judging risks and, therefore, the price. To get close prices, we must protect contractors against

abnormal risks in war production through appropriate contract clauses. The alternative, contracting for prices which are loaded with protection against contingencies, is incompatible with reasonable pricing. Therefore, we use contract provisions which protect the contractor against cost factors beyond his control at the same time that risks of inefficiency are retained.

Assuming now an intelligent use of these techniques and perhaps other methods by both contracting officers and industrial purchasing agents in individual transactions, the fact remains that in large scale war buying an important supplementary technique is nevertheless necessary. That is the *fifth* one I wish to mention. A large proportion of wartime buying is made under unusual circumstances. There is a great deal of fluctuation in the volume of or-

ders in individual plants. There are many changes in engineering designs, availability of materials, productivity of labor, and production methods. This means that there are many cost absorptions difficult to predict and many costs difficult to allocate in advance to individual orders received at different times. It is therefore necessary that there be an occasional frank consideration between buyer and seller of the overall problems, prices, policies, and position of the company. necessity caused us to adopt a program about two months ago which we then called "An Experimental Program for Review of Company Pricing." We consider it necessary as a pricing technique quite independent of renegotiation. This is leading to a much closer cooperation between renegotiation and procurement personnel.

REALISTIC PRICING

Government and industry have a joint responsibility for keeping costs and prices on war contracts in line

By VINCENT DE P. GOUBEAU
Office of Procurement and Material, Navy Department

WAR procurement responsi-bility does not stop with production. We have a further joint responsibility-the assurance to industry and to the Armed Servicesthat the prices paid for these materials are based on a realistic estimate of necessary costs and reasonable profit. This obligation arises in part from our twofold duty to hold down the cost of this war as much as possible and to do our share in helping to minimize the inflationary forces arising from military procurement. But more than this, realistic pricing has a very definite connection with production. It is the best insurance we have of efficiency in the use of materials and manpower. Manpower today has become the critical item of production. It has replaced steel, aluminum, rubber, and high octane gasoline, each of which, in turn, held the spotlight. The only synthetic substitute for manpower is effi-

Formalized competitive bidding, the peacetime procedure of Government procurement became outmoded almost overnight. Your firms and your sources of supply were being deluged with business. And yet, we were not getting production quickly enough. Consequently, it was necessary for Donald Nelson, by Directive Number 2, to suspend the peacetime practice of competitive bidding and to replace it by negotiation of contracts on a broad scale. This placed upon the procurement officers a very direct obligation to know costs when placing orders. However, there was very little basis on which to develop these costs and even with the aid of price ceilings imposed by OPA on raw materials, procurement at reasonable prices was a mighty difficult task.

With the declining effectiveness of competition, realistic pricing depended increasingly upon the accumulation of adequate facts concerning costs of production. Costs, however, were to a large extent unknown. Your management was being asked to produce new products, products which were often subject to constant change in specifications. Many companies were asked to convert overnight from the production of peacetime goods to

radically different war products—from harmonicas to gyro compasses, from printing presses to guns, from bridges to ships. Even in the field of standard commercial articles, costs were not known accurately, because, although economies resulting from volume production could be anticipated, their magnitude was unpredictable.

#### The Second Phase

When the immediate crisis was over, the Services moved into a second phase of the procurement We in the Navy Department enlarged our procurement staffs to meet the demands of the expanding program and to search out the facts of costs. To assist our contracting officers, and to assure ourselves that a reasonably good job of buying was taking place, we introduced a system of clearance of contracts for the Secretary of the Navy, of all procurements exceeding \$200,000. This clearance function consisted of reviewing the various aspects of the procurement from a good purchasing viewpoint-quality, delivery, price, reliability of supplier, and so on. In addition, and quite important, we introduced a method of cost analysis which was to become a standard instrument for negotiation of contracts. How else could we buy under the conditions of all out production for war? In our search for this common denominator, whether it be the manufacture of pants, planes, shells, or ships, we settled on a form of cost breakdown because the production of all products includes material, labor, burden and, of course, profit. Accordingly, we required that with each clearance submitted there would be attached a cost breakdown of the deal.

Another step in the attempt to hold the line and avoid excessive profits on military procurement was the passing of the Renegotiation Statute, which provided for the overall renegotiation of contractors making war products.

Renegotiation, however, was not successful in stimulating cost reductions and downward revision of prices on future deliveries. Many contractors have, to be sure, made substantial voluntary reductions. Others, both prime and subcontractors, have made voluntary refunds when they found their profits excessive, but price reductions on the uncompleted portions of those contracts did not accompany such refunds. Refunding money on past business is not realistic pricing.







We are now moving into the third phase of the procurement cycle. The War and Navy Departments are embarking cooperatively upon a widespread and vigorous program to place industry on a realistic price basis with respect to products purchased directly by the Government and subcontracted materials purchased by you.

The new approach is appropriate at this time for several reasons. In the first place, those factors no longer exist which might justify procurements which do not meet the test of reasonableness. Many, if not most, of the uncertainties of costs have been minimized. Likewise, renegotiation has established a basis for resetting of the sights by management of the range of profits which should be expected on material provided for military use.

Congress has provided for the elimination of renegotiation at the

end of this calendar year, or by June 30th of next year if so extended by Presidential order. To emphasize the responsibility of the Services to secure realistic pricing, Congress included Title VIII in the recent Revenue Act of 1943. Under Title VIII, the Secretaries of the War and Navy Departments, and of other Government procurement agencies are given the power, by order, to fix a price that is considered fair and reasonable whenever the contractor, whether a prime contractor or a subcontractor, refuses to agree to a price by negotiation. Any contractor aggrieved by such an order has the right to sue the United States in an appropriate court. This is a drastic procedure and it should be used cautiously.

We all must work together to restore the American System of free competitive business. This is our

joint responsibility.

production experts have thought it expedient to ignore their purchasing departments and take a fling at buying themselves, leaving the latter to perform a few of the functions of ordinary clerical procedure. The results have in many cases been interesting though bordering on the disastrous.

#### Make or Buy?

Buying at the proper price affords plenty of opportunity for you to use all the ingenuity that you can muster. You may find it desirable to ask your subcontractor to segregate his engineering and tool costs so that they may be paid for as separate services. You will want to consider what type of tooling will produce maximum production consistent with the life of the contract and will amortize the cost accord-

Your own ability to expand will have an important bearing upon the volume of work that you will find it necessary or advisable to subcontract, and where you place your orders will be influenced by the resourcefulness of the vendor in rising

to the occasion.

Where you formerly bought on confidence from sources who had demonstrated reliability and the talent to perform in accordance with your requirements at a fair price, you now find yourself dealing with vendors of uncertain origin. Thus your normal procedures have been disrupted and you are obliged to develop new methods of approach to obtain satisfactory results. Normally there was a mutual interest between you and your sources of supply that was built upon satisfactory relationships over the long term. In certain cases, this desirable condition is conspicuously absent because of regulations and limitation orders. Today your wartime associates may be just that and nothing more. Many had perfectly good intentions but

### PROBLEMS OF SUBCONTRACTING

Confidence in your supplier is a fine thing, but contract settlements will be founded on documentary evidence

> By WILLIAM T. ROACH Eastman Kodak Company

THE important decision whether to 'make or buy' depends a good deal on the resourcefulness of the purchasing department. If this function is handled intelligently, your company will be able to carry a much greater burden of production volume. Thus you are enabled to concentrate upon those talents that you

can use to the best advantage in your own plant and pull in the supplementary items from your sub-contractors. This is a heavy responsibility and one that the capable purchasing agent should be glad to assume.

There have been times during the war years when engineering and rapid expansion brought about topheavy management and the uncertain status of the labor force was something to conjure with. Thus one must proceed with a great deal of caution when making commitments, and nothing can be assumed or taken for granted. When it comes to a showdown, settlements will be founded on documentary evidence and any other type of information will be to a large degree irrelevant.

#### Buyer Has Responsibility for Sound Procedure

Under the stress of circumstances, there is a strong inclination to get what is needed, get it quickly and worry about the audit later. Present conditions do not relieve the purchasing agent of the responsibility of protecting the interests of the taxpayers and his stockholders alike. The successful operation of your company cannot be relegated to the background. We cannot afford to

become so imbued with patriotism that we let ourselves go and thus step entirely out of character.

Buying on confidence has been narrowed down because very often your old standbys have been overburdened with a volume of business for such long periods of time that they were helpless to come to your assistance even if they so desired. At times you probably felt that they did not want to but you, no doubt, have made a note of these and have certain plans for the future.

There are times when negotiations must of necessity become instantaneous settlements and it is therefore essential that the purchasing agent and his staff be thoroughly conversant with the various factors that affect his product. Each of your various buyers must master his particular assignment and they must function as a coordinated unit. Individually, they must be resourceful, imaginative, and possessed of some

degree of flexibility so that they may improvise upon occasion.

#### Supplementary Facilities

A definition of buying as it relates to the current program, as I see it, would be that buying, aside from the procurement of raw materials, constitutes supplementing your own manufacturing facilities by employing the resources of others. Inasmuch as some of these skills are potential rather than actual, it may be necessary for you to offer various kinds of encouragement to your subcontractors aside from monetary rewards. You may have to assist in providing equipment, technical knowledge, materials, and advice to cope with certain obstacles that seem to them to be insurmountable. Having done this, you are in possession of additional departments that are removed from your own organization by virtue of physical location

### PULP AND PAPER CRITICAL

Civilian products drastically cut — Printing and fine papers down 15% to 26% — Luxury uses out — See no relaxation in military and defense plant needs

"D ESPITE the fact that for the year 1944, at present projected rates, 17 million tons of paper and paperboard will be made, military requirements for fibre shipping containers, waterproof papers, maps, multiwall bags, and other essential papers made from kraft pulp will materially reduce the available supply for civilian products, such as paper bags and wrapping paper during the remainder of the second quarter, and I expect the same to hold for the third quarter," declared Robert Porter, Purchasing Agent of the Provident Trust Company of Philadelphia.

Mr. Porter stated that, in his opinion, production will reach the bottom of the downward curve by the end of the third quarter and then it will run on a level until the end of the year at which time "we may definitely expect production to rise."

He stressed the need for continued efforts to gather all available waste paper since "only on the basis of distribution of supplementary fibre along with the new fibre will it be possible to keep all mills in operation, though it be on a curtailed basis."

#### No Cause For Optimism

Although receipts of both pulp-wood and waste paper in the first quarter of this year compared favorably with a year ago, too much optimism cannot be drawn from these figures because in the first quarter of 1943 pulpwood receipts were the lowest in many, many years, due in part to poor weather conditions, whereas in the first quarter of this year weather conditions generally were very favorable," said Rex W. Hovey, Director of the Paper Division, War Production Board.

He said that no stone has been left unturned to step up both the production of pulpwood and the salvage of waste paper. He specifically mentioned the increased use of war prisoners and the increase in mechanical equipment, especially in the form of power saws. "This partly offsets the otherwise unfavorable trend in pulpwood labor," he said.

In discussing the over-all paper

situation, Mr. Hovey said: "In the first quarter of 1944 total production of all types of paper and board was about 2% greater than a year ago. Production of paperboard increased 5.6%, whereas paper itself declined 1.6%. I want to emphasize that the decline in paper was due almost entirely to curtailments in the production of print papers, such as newsprint, groundwood papers and book papers, and to a small extent to a decline in fine papers. Aggregate wrapping paper production, multiwall sack paper, special industrial papers, absorbent papers, building papers, tissue papers are These obviously are war purpose papers and highly necessary under present-day conditions."

#### Civilian Bags Down 40%

Paper production schedules for the second quarter of 1944 are based on substantial cuts for printing papers, while the cuts for fine papers and coarse papers are not quite as drastic, said Henry G. Boon, Assistant Director of the Paper Division, War Production Board.

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# LOOKING AHEAD IN THE RUBBER INDUSTRY

Demand will continue on the upgrade and synthetic production will serve as a major source and cost control

THERE has, perhaps never been a time in modern history, when prophecy was a more dubious pastime than now. There is no industry, or in fact, any group of individuals whose future will not be affected vitally by the war—not only its outcome, but also its duration. In this talk, the basic assumption is that the war will be essentially completed by a United Nations' victory, by the end of 1946.

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It is further assumed that, by the end of the war, a degree of statesmanship will be exhibited which will negative the requirement for a series of armed camps and will place this country in a sounder position than that of a benevolent creditor. Perhaps this is one of the most optimistic assumptions I shall make today.

The advent of the war found this nation unprepared. We were protected by our geographical position from direct attack on continental United States. We were, however, shamefully caught napping in our Pacific island possessions. Even with our favored location, there was one thing only that saved us and that was the miraculous speed with

#### By R. P. Dinsmore

Vice-President
Charge of Research & Development
The Goodyear Tire & Rubber Company

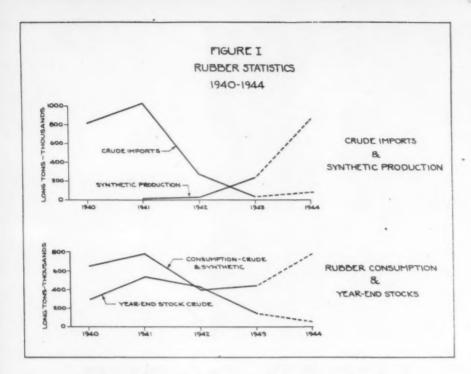
which science and industry performed the job of turning out war material. For him who has eyes to see, therein lies the explanation of the advantageous position which has been enjoyed by our people in material wealth as compared to other nations. The answer is not alone in natural resources, but in efficient, flexible industrial management, intelligently keyed-in with scientific development.

There are many reasons, today, for questioning the future of the Rubber Industry. Because of the Japanese seizure of most of the rubber-growing territory, the industry is just coming through the worst crisis of its history. To counteract the rubber shortage, the rubber, oil and chemical industries constructed, in record time, a huge synthetic rubber producing project, which is now coming into full production. What part will this new material play in

the postwar future of the industry? Moreover, in the years before the war, the rubber producing capacities of the crude rubber plantations were so much in excess of market demand that the British and the Dutch restricted the output in order to maintain a profitable price. Will this huge volume of rubber wipe its new synthetic cousin off the market? Will rubber be cheaper? Will it fluctuate widely in price, as it did in the past? Are we reaching the saturation point for rubber absorption or do new fields await us? How will the new plastics affect the use of rubber? These are some of the questions that arise and for which answers will be suggested.

#### The Statistical Picture

The year 1941 as shown by the charts, was the year of highest rubber consumption in United States' history, although on two occasions, 1937 and 1939, world consumption hit its maximum which was higher than for 1941. You will observe that Crude Rubber Imports dropped sharply in 1942 and were very low in 1943. Consumption of rubber



was curtailed drastically in 1942 and 1943, but even so, the year-end stocks went steadily downward. The synthetic production story is seen at a glance; 1944 is the real turning point.

These figures show how close we have been to disaster, how the high imports of crude in 1941 gave us the breathing space which enabled us to build the synthetic program just in the nick of time to pick up the burden of the exhausted crude rubber. The figures do not show the things that nearly prevented the timely completion of the synthetic program, nor do they indicate the problems which this new material placed in the laps of the rubber goods manufacturers. The rubber production is rolling in. The production of rubber goods is rolling out. At some time between Mid-summer and Fall the rates of both will be in reasonable balance and our crisis will be nearly over.

It is true that we have not yet learned to do everything with synthetic that we can do with natural rubber. In some places we could not at the moment do a very satisfactory job with 100% synthetic. A notable example is the large, highspeed truck and bus tire. The tendency of synthetic to heat up faster, under flexing produced by heavy loads and high speeds at summer temperatures, has made this problem difficult of solution. Yet with the 8% or so of crude which we expect to be able to continue to import from South and Central America, Ceylon and Africa, we shall be able to fortify these doubtful spots sufficiently to do a satisfactory job. Improvements in compounding the rubber have been progressive and will continue. Rubber improvements have been definite, though less extensive, but in all probability, will increase in magnitude and frequency. So much for the immediate situation.

When a commodity can be delivered to the United States' market for three years, as in 1931-33, at average yearly prices of 6.1¢ per pound, and 5.9¢ per pound, it raises some questions in the minds of those who know that synthetic rubber (GR-S) of the most abundant type probably costs between 40 and 50¢.

Several authorities have stated that crude rubber can be produced on high-yielding efficient plantations and sold at a profit in this country for from  $10\phi-12\phi$  per pound. Statements have been made that the cost of crude production might even be brought below  $4\phi$  per pound. Other authorities state that synthetic may be produced at a cost of from  $12\phi-16\phi$  per pound. Certainly we must examine these possibilities in our attempt to define a post-war picture.

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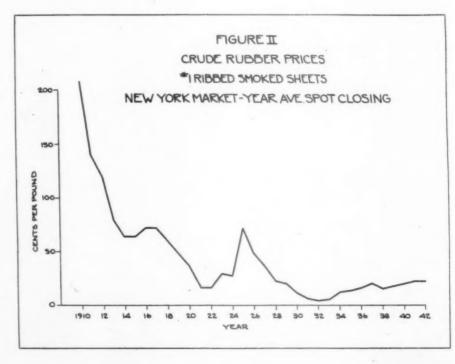
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Rubber consumption figures for the United States, in the past thirty years or so, tend to fluctuate around a normal line, much as economic activity does. This line to be sure is not one of constant volume, but rather one of constant increase. The figures for world consumption are somewhat less certain in this respect.

#### Trends of Consumption

It is also important to observe that the major use for rubber, in this country and in the world, is for tires and tubes, in which the automobile tire preponderates. Therefore, to some extent, rubber consumption figures for the past twenty or thirty years, merely reflect the growth of the automobile business. Certainly any major change in the pattern of that industry would alter the rubber consumption curve. Perhaps such a change is in the making.

As to world consumption of rubber, it is obvious that in a world of two billion people, it cannot be expected that a country of 133 million will continue to consume a major proportion of such a useful commodity. From 1910 to the late twenties,



this country used very nearly 75% of the world's consumption. From then until 1940 the trend was much more nearly toward 50%. Any impetus toward industrialization abroad will tend to increase the slope of the consumption curve for the rest of the world. Any change in our automobile absorption pattern will tend to vary the slope of our consumption curve. There is little doubt that the former was under way before the war and will probably develop faster after the war.

The discussion of post-war uses, so far, has centered about replacements for the most part. In the category of Mechanical Goods, some allowance is made for new products. However, this is not an important proportion of this group. Some of

general furniture upholstery cushioning. No estimate has been made of potential rubber requirements for these purposes for the period up to the end of the war.

Rubber-Spring suspensions for automobiles are on the way to replace steel springs. Comfort and ease of driving are greatly enhanced and the strain on the vehicle is greatly reduced. This use may require from 10,000 to 25,000 long tons of rubber. Vibration Dampeners for industrial machinery and for railroad trains had begun to demonstrate their value prior to the war. They reduce noise and wear and tear on the machinery and drives. The amount of rubber required per item of equipment is small, but the number of machines

is tremendous. A tentative estimate

be in increasing demand as the price level of the starting materials goes down. Certain uses of these products such as the packaging of fruit, vegetables, other foods and perishable materials, to protect and prolong their usefulness during transportation, are of the utmost importance in our economic development. These chemical uses may require from 25,000 to 100,000 long tons of rubber annually.

If these various miscellaneous uses for rubber are combined they offer an annual potential of from 63,250 to 191,000 long tons of rubber compared with a pre-war use of over 50,000 tons for miscellaneous purposes.

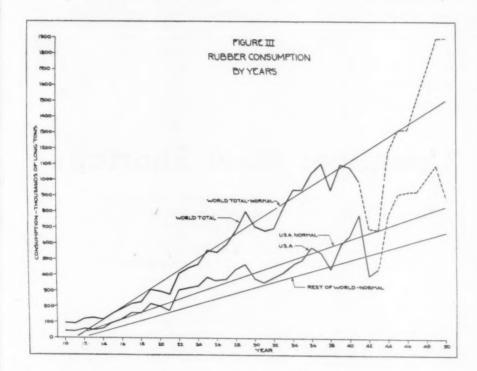
After the War

In order to estimate the availability of rubber, we must consider the plantation situation. Of course, no one can say with certainty, when the plantation areas will be recovered. Undoubtedly, steps will then be taken for their rapid rehabilitation. Even so, small native estates will be the first to produce, because of simple equipment. The re-organization of labor and replacement of equipment on large estates will be a difficult and tedious job. The attitude of the natives may be un-cooperative and international disputes are not unlikely. It is expected, therefore, that after complete repossession, the first year will not produce over 400,000 tons of rubber and the second year not more than 700,000 tons. It may require two more years to reach 1,500,000 tons output.

The world may be facing a tight rubber situation for nearly four years after the war, unless we see fit to expand further our synthetic output. This is quite a different view from the one frequently expressed that, post-war, the market will be flooded with cheap crude which will drive synthetic out of existence. It is important, because it means that synthetic must not only meet our war needs, but must be able to cope with a large portion of our post-war requirements and all the changed conditions under which rubber products will be used. It is likewise evident that synthetic has five or six more years in which to become competitive, in cost and quality, with the natural product. Can any informed individual doubt that this is sufficient time?

A few words about the much-debated comparison of natural and synthetic rubber costs are in order.

An efficient large estate, with high-yielding trees, could lay down



the potential new and accelerated uses may be of interest.

#### **New Applications**

The cushioning and energy-absorption capacities of rubber have developed certain outstanding applications that have proved their merit and are certain to advance in the post-war era. Cushioning of the human body by the use of latex sponge has proved capable of providing maximum comfort with greater durability under severe conditions of use than any other material. It has demonstrated its value in automobiles, trucks, buses, railway coaches and pullman cars. It is likewise highly satisfactory for mattresses in pullman cars, hospitals, hotels and homes, as well as for is placed at from 1,500 to 6,000 long tons.

Rubber tires are developing the use of farm vehicles, tractors and other implements. The use of tires has already extended the range and efficiency of such equipment and universal adoption of tires is practically certain. It is quite probable that rubber cushions and shock-absorbers will be employed to reduce the fatigue of the operator. Such vehicles and implements should require from 10,000 to 20,000 long tons of rubber.

One further use of rubber deserves brief mention. It is the use as a starting material for chemical reactions. Rubber derivatives suitable for lacquers, adhesives and plastics can be made from natural rubber and suitable synthetics, which will

### PACKAGING PROBLEMS

Not enough wooden containers to go around—Steel situation tight— More glass orders than can be filled—Fibre drums and textile bags on week to week basis

By E. J. DETGEN

Director, Containers Division, W.P.B.

W E feel, that, generally speaking, packaging has not received the emphasis and action on the part of industry, Government and the general public which it demands. By packaging we mean all types of containers and packaging materials. We must make more people realize that without packaging our operations will collapse at home and abroad.

No packaging material can be permitted which is not absolutely necessary to get the product from the producer to the ultimate consumer. As the situation looks now, containers will be a serious limiting factor in production and distribution in 1944 if we fail to put our heads together and give this problem the same concentrated attention and effort which has helped us lick so many other wartime problems.

Following is a summary of the packaging situation as it looks at this moment. As we go down the list we find that the type of steel used in packaging will be extremely tight in the third quarter of 1944, with forecasts a little on the optimistic side for the fourth quarter but subject to invasion developments. This means to us, of course, that the demand for all types of metal containers will be considerably greater than the supply during this period. The glass situation seems to be much better today than it was a year ago, but we still have more orders than we can fill. Glass production is closely linked with the paperboard situation and it is quite likely that paper will be the controlling factor in this industry for many months to come.

There are not enough wooden containers to go around, which means that it is "touch and go" on nailed wooden boxes, wire-bound boxes, baskets and crates. However, the new lumber control program will permit the War Production Board to direct the end product use of lumber much more specifically than it has been able to do before, and we have reason to believe that such an essential use as containers

will receive satisfactory treatment under forthcoming allocations. In a word, we hope to have more lumber for containers as a result of this program than we have had recently. On the other hand, it would be foolish to think that we will be able to get all the lumber we need.

Fibre drums and textile bags are pretty well in balance due to the existing orders controlling these fields but even here we are on almost a week-to-week basis.

The picture is not a happy one in view of the fact that some production and material problems are easier this year than last. We can only say that as the war intensifies, packaging needs become greater, and this situation will be further aggravated if the production of civilian items is relaxed any time this year. We are proud of our container industries for the tremendous job they have done and feel confident that with this continued effort, plus streamlined packaging methods, re-use, and the many other steps you can take to help yourselves, packaging will not be a stumbling block in our great nationwide productive effort.

### Container Steel Shortage

Fibre drums critical—Just about enough textile bags— Tight and slack cooperage in limited supply

By F. J. HYNES

Chief, Barrel, Drum and Bag Branch, Containers Division

THE story that steel is more readily available is true for readily available is true for only certain shapes and sizes. Precisely the opposite is true with respect to steel sheet. Because of new and heavy military demands, par-ticularly for shell containers, the third quarter is shaping up as the most critical period to be encountered in the entire war. Effective utilization of drum sheet in manufacturers' inventory will enable the Containers Division to meet the requirements recognized by L-197, the governing order. Any prospect of further easing up on this order in 1944 is extremely unlikely.

By intensive reuse and conservation of existing steel containers and the packaging in alternate containers made of fiber and wood, few essential products have suffered significantly for want of a large steel shipping container.

Fluid Milk Shipping Containers: Ample steel will be made available for fluid milk shipping containers in 1944 and prospects are extremely favorable that 1,700,000 cans will be produced, the amount that W. F. A. estimates is required for the year. This compares with the prewar average of 1,100,000 per year. On the other hand it is extremely unlikely that manufacture of the umbrella type covers will be resumed this year in view of the tight situation with respect to sheet steel. It is estimated that use of the plug cover in place of the umbrella type saves 1,630 tons of steel per year.

Gas Cylinders: The demands of the armed service for this type of container continues to increase so that none will be available except in limited quantities for the most vital needs. About 200,000 tons of carbon and alloy metal will be consumed in 1944 compared to a consumption of 50,000 tons in 1941.

Fibre Drums: This industry has expanded to a point where it has reached an annual potential capacity of 25,000,000 drums compared with

a previous capacity of roughly 6,000,000 drums per year. Unfortunately, the extremely short supply of fibre and labor shortages will not permit full utilization of this capacity; it is estimated that paper will be made available to produce no more than 14,000,000 fibre drums in 1944.

Several products which had been packaged in fibre drums in order to save steel have been shifted back to steel primarily to conserve fibre.

Textile Bags: The demand for bags for Army, Navy and Lend-Lease requirements as well as the extremely heavy demand for bags for agricultural products continues unabated.

In 1943 a total of 1,860,000,000 yards of textile materials (burlap and cotton fabrics) was cut up and made into bags. It is estimated that the bag requirements for 1944 will be at least equal to the 1943 consumption.

However, it is reported that secondhand bags are coming into the market in increasing supply and it is therefore expected that just about enough bags will be made available to satisfy the 1944 requirements for containers of this type.

Slack And Tight Cooperage: The same factors that contribute to the shortage in fibre and paper and wood account for the limited supply of tight cooperage—that is, the shortage of labor.

It is unlikely that the production of tight cooperage can be materially increased this year. It is likely that 1944 production will not exceed the estimated production of 1943 which was 4.3 million tight barrels and 1.6 million tight kegs. Against this production, requirements in 1944 are expected to exceed 1943.

The story on slack cooperage is much the same as on tight cooperage. No material gains can be expected in 1944.

be utilized to full capacity because of insufficient lumber. The prospects for any real improvement in the nailed wooden box situation are not bright. The military demands will keep climbing, no doubt, as long as activities in the European and other war theatres continue to increase. The lumber production picture is not expected to improve. In fact, production in 1944 will be below 1943 according to forecasts.

Wirebound boxes and crates are made from both lumber and veneer. They are used for a multitude of military items. Civilian items of importance are meats, poultry, fresh fruits and vegetables. Many industrial items also use these wirebound containers. Currently about 60% of the volume is going into containers for foods.

Production has been seriously limited during the past year and a half because of a shortage of veneer. Members of the industry estimate that the current rate of production could be increased by from 25% to 30% in most of the industrial plants if sufficient veneer could be obtained. It is expected that supply of wirebound boxes will be extremely tight for some time to come.

In summing up, therefore, it appears that the supply situation on all these types of wooden containers will be tight for some time. If the wooden container users will exercise their ingenuity and resourcefulness to the utmost in the conservation and reuse of packages, I firmly believe that no product will have to go without a container suitable to carry it to market.

### Wooden Containers Tight

Prospects poor for improvement—Rigid conservation and re-use will relieve situation

By GUNTHER CARLBERG, JR.

Chief, Wooden Container Branch, Containers Division

THERE are four distinct types of wooden containers handled in my Branch, namely: nailed boxes and crates; wirebound boxes and crates; cleated plywood boxes and crates; and veneer baskets and hampers.

The nailed type boxes and crates are, for the most part, made from lumber. It is in this type of wooden container that we have had the greatest increase in demand. Nailed boxes and crates are used for the shipment of a large variety of products from ammunition to tanks and planes. Chief among the civilian type goods that use this container are fresh fruits and vegetables.

The huge increase in requirements has come from the military, however. Overall demands have trebled within the past three years. In 1941 some  $5\frac{1}{2}$  billion board feet of lumber were used for boxing, crating and dunnage. In 1942 consumption jumped to  $9\frac{1}{2}$  billion and in 1943 to about  $16\frac{1}{2}$  billion board feet. Estimates for this year indicate the total will be about 17 billion board feet.

The major problems of nailed wooden box manufacturers are the

shortage of lumber and manpower. At present there are sufficient plants and equipment in the industry to meet the demands amply, high as they are, but the facilities cannot

### Glass is in Best Supply

Can order cannot be relaxed—Paper items affected by paper shortage—Inner-containers may be further restricted

> By ROY F. SEGUR, Chief, Consumer Package Branch

My phase of the packing industry is glass, cans—both fibre and metal, paper milk bottles, paper closures, cups and metal and paper tubes. Of all these containers glass is in the best supply. The glass industry has done a wonderful job in pushing production from 65 million gross in 1942 to estimated production for this year of somewhat more than 100 million gross. At present there is sufficient glass pro-

duction to comfortably cover the requirements of the glass order, L-103-b, and it is possible that we may be able to relax this Order later in the year, although increasing military demands and the prospects of a large food pack make this relaxation still a matter of conjecture.

The continued tight steel position is making it necessary to continue restrictions on the use of this metal for crowns and closures, but we are working on a program to make aluminum available for this purpose and are hopeful that this will relieve the closure problem. There is, of course, greater demand for glass containers than that permitted under the terms of the Order, and it is the intention of the War Production Board to release glass for new items and increase quotas for items now permitted as rapidly as conditions may warrant. The most serious problem confronting the glass industry is the availability of shipping containers.

Metal cans are controlled by a very rigid end use order, M-81. This Order was relaxed somewhat in the early part of this year. Approximately 95% of the cans being manufactured to meet the terms of the Order are for packing foods and many more are being manufactured for special military items such as flares and fuse containers. There has been a great deal of misunderstanding regarding the metal can position and this has led to the erroneous belief that substantial relaxation of the can Order might be expected. Actually, military demands for steel are such that we will have barely sufficient tinplate to meet the requirements of the Order and the special military requirements, and indications are that no substantial relaxation of the Order can be ex-

pected this year.

Our paper items are suffering with all other paper containers from the general paper shortage. It is very difficult to work out plans to restrict the use of these containers since in many cases they are now being used as substitutes for metal containers, and in some cases, if we are forced to restrict the use of paper containers, it will be a matter of finding a substitute for the substitute which by now is pretty difficult. Our present plan is to restrict the manufacture of paper milk bottles, cups and nested food containers and liquid tights to approximately the amount of paper these industries used in the last quarter of 1943. It will permit meeting only the most essential demands and will require the use of substitutes such as glass milk bottles and chinaware wherever possible. It appears that it will be impossible to allocate additional quantities of paper for the manufacture of paper-inner containers and it may be necessary to restrict them further.

outlets to save only cartons in which well known brands have been packed. After the grocer has been persuaded to save the cartons the problem then resolves itself into one of pickup of cartons and delivery to

We should like to emphasize that those who pack and ship products most certainly should and can help themselves materially by securing the return of their own cartons.

Almost every plant receives a wide variety of packaging materials. Besides the usual cartons, drums, etc. in which raw materials are shipped, there is wood in the form of dunnage and crating. All of this material is valuable and should be saved. You are urged, when you are in need of packaging material, to look around your plants for that material. Ask your local W.P.B. Redistribution Officer which plants have such material. Many of you have container material stacking up in your back yards where your purchases are unpacked. What do you do with it? Do you use it? Do you sell it to another plant? Do you sell it to a junk man or do you burn it? How much of this material do you use? How much from your neighboring plants do you use? Do you report the material which you cannot re-use to the Redistribution Officer of your local W.P.B. Office? The Paperboard Division of W.P.B. has reported several cases where large corporations acting as subcontractors in the manufacture of important war weapons have failed to return to the prime contractors the heavy solid fibre shipping cartons in which a single item in tremendous quantities was being received. One specific case came to light when the prime contractor telephoned the Paperboard Division to ask them to put pressure on a subcontractor to return shipping cartons. This prime contractor had a AA-1 priority but he had only a four days' supply of cartons left and no more expected for some time. The shipping case involved was cylindrical and required special construction of solid fibre material. It was good for only a specific product. Here was the simplest kind of opportunity for most effective re-use. The shipping case had only a simple distribution outlet. It was good for many trips. It was in large quantity. Each reuse saved skilled labor, time and valuable pulp. It seems inconceivable that in these critical times that a large corporation could give valuable aid in one direction and indifferently obstruct the war effort in another.

### Re-use of Cartons Urged

High priorities no assurance of adequate supply-W.P.B. offers advisory services on recapture plans and redesign

By H. A. CARROLL

Container Re-Use Section, Containers Division

ARTONS in general are susceptible to more and varied plans of recapture than are other types of containers. Therefore, we feel they should have some special emphasis in the re-use campaign. The first and foremost question in regard to cartons is, "Where may cartons in major quantities be found?" The source of large quantities of cartons is the 1943 food pack plus a few other items. They may be found in float daily to the retail grocery outlets of the country. Approximately 557,000,000 boxes were made for the 1943 food pack. It is estimated that 278,000,000 of these passed through the hands of waste dealers. The percentage of boxes thus salvaged was about 50% for each of the varied types.

A substantial assist can be accorded the civilian packaging front if these cartons are re-used. Some industries are already using these cartons. For example cigarettes are now being shipped in #2½ canners' box, shirts in #10 canners' box, and soap in nearly all the sizes shown. One soap manufacturer is asking for over a million can cases per quarter. It is recommended that packers obtain a few cartons of sizes which appear to be adaptable and make experimental packings of their products. For example, the soap industry found that most of the sizes could be utilized but with odd lots of bars of soap. Other packers found that newspaper stuffings were required to fill the cartons.

Each user will quite likely find a way for getting cartons from retail stores. In the main, a price incentive should help considerably to induce the grocer to save the sizes wanted. Some companies have made arrangements inducing the retail

### COLLECTIVISM DELAYS RECOVERY

There is every reason to expect the usual postwar industrial cycle, leading to high levels of production and national income, but politics are scrambling the time-table

#### By DR. LEWIS H. HANEY

Professor of Economics New York University

N considering the production trend and outlook, we should begin by recognizing that the war is the main factor. Perhaps as much as 70% of the total industrial output consists of war goods. One great future problem lies in the matter of terminating war contracts, and re-converting war industries. The rest of the problem concerns so-called postwar planning and the question of continuing war controls. War temporarily solved the unemployment problem of the 30's, and peace will threaten a renewal of that problem. War brought inflation to a climax, and the passing of war will intensify the fight against inflation.

With the foregoing understanding, one may say that the most effective way to consider production trends and outlook at this time, is to ask the question, Why not the usual sequence of events attending great wars? Why not a war boom, followed by a reaction at the termination of the war, with the whole situation reaching its denouement in a postwar boom?

Surely there are the same reasons now that have always existed to explain this normal sequence of war and postwar events. To begin with, we have a vast amount of unsatisfied desires and postwar wants. In business the counterpart of this is a terribly depleted business capital. To implement the desires that come from these deficiencies, there is a vast and growing purchasing power in terms of currency. Individual incomes have soared since the war began, much more than have taxes or the cost of living. The vast potential inflation existing in the shape of bank deposits, the growing effectiveness of which is finding expression in the diminishing excess reserves of the central banking system, should be known to all. There has been a subnormal use of private credit throughout the war.

In general the destruction of capital throughout the world, and the disruption of the productive mechanism, invite and challenge a great upsurge of productive activity. It has always been so after great wars.

#### Economic Pattern of War

The usual sequence calls for a sharp rise in production during the first two or three years of a great war. After this initial spurt, the war machine having been completely set up, there comes a dip in production. Then periods of manpower shortage are apt to become effective, as is now the case.

Is this not exactly what has happened since 1939? Probably the peak of war production was reached last Fall. There has been a dip recently, as stocks of semi-finished goods of various sorts accumulate, and the great decline in building and construction, to say nothing of machine tools, shows that the war plant has been completed.

Usually after the first dip in the war boom, there is a recovery which does not, however, carry production above the preceding peak. This, too, may be expected. At the present time, for example, we are just ending the landing-barge and landingmat stage in steel production, and are in the midst of a great demand for lumber, "shell steel", and heavy ordnance. The production authorities are announcing that civil programs for increased building and household equipment must be post-

#### Postwar Fluctuations

In the postwar period there is usually a relatively short decline, lasting perhaps for some such period as a year, soon after the coming of



peace is known or anticipated. On the one hand, war production is apt to be curtailed sharply. (Today, for example, many war contracts are not being renewed. Many are being "cut back". Some are being cancelled.) On the other hand, civilian production while picking up, gains

more slowly.

In this phase, any uncertainty affecting postwar business plans may have a considerable retarding effect. Perhaps uncertainty concerning radicalism may delay the pick-up of civilian production. Perhaps, as the first strained readjustment is felt, the demands of labor may come to a head in the shape of strikes for higher money wages. Certainly as the end of the present war draws near, labor leaders will increase their efforts to get higher hourly wage rates to make up for the reduction of overtime pay.

Following the first postwar decline, however, there always comes a period of great so-called prosperity -a period of postwar inflation characterized by great expansion of production and employment. Such a period is almost certain to return to or exceed the preceding peak of war

production.

#### Managed Economy

Now to the question, Why should this usual sequence of events not carry through from here? If the war ends in 1946, why should there not be a minor recession in 1947, follow by a postwar boom before the end of 1948 which might carry on for at least two or three years?

The first point I would make is a negative one, namely that there has been no such relatively great expansion down to the present time as some fearful analysts have fancied. The plain fact is that the industrial production index by which most ob-

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servers judge the expansion of production, is itself inflated. It is based so largely on man hours, and other substitutes for data showing actual output of products, that it does not truly reflect industrial production in any ordinary sense of the term.

It has been estimated by one careful student that the real increase in industrial production in the three years from 1939 through 1942 has not been 68% as the Federal Reserve index says, but really only 35%. This compares with an increase of 32% from 1914 through 1917, the corresponding period in World War I. The two increases are substantially the same. Thus we do not start from any such extraordinary peak as the Reserve Board statisticians would suggest.

Note that the big difficulty, and the big difference between the outlook for production today and that in other wars, lies in the retention of certain destructive forces which is now threatened. These head up in a lack of incentive to enterprise. The forces I refer to are that American form of collectivism which kept 10 million men unemployed in the pre-war period, and the active propaganda for the projection of war controls into the postwar period. It all comes down to so-called postwar planning. Unless industry is given freedom to expand, how can one be sure that it will expand? Unless prices are allowed to rise, there will be no great gain in production or in employment. If we are to continue rationing and price-fixing in the postwar period, we need not expect a postwar boom. That would mean a managed economy which would not let the purchasing power already created come into use. That would substitute deflation for inflation.

#### Synthetic Income

So the question America, to say nothing of the business forecaster, has to decide with reference to production trends and outlook is, What shall be the attitude of its government toward the system of free priv-

ate enterprise?

Much of the trouble lies in the smart-alec idea that the government can create purchasing power - or make the people think so - by taking money away from its citizens as fast as it hands that money out to them. Sometimes this is disguised by saying that the people will enjoy saving, and will continue to hand over their money gladly. Sometimes there is talk about the desirability of buying government bonds, as if saving were the same as investment.

You see, the idea is that the Government, after giving money out and taking it back, will then have it so that it can spend it, or otherwise give it back again to the people from whom it took it! The more the Government borrows, the more it spends; and the more it spends the more it can borrow. That is about the basis for saying that we need a national income of this or that number of billions of dollars in order to support a debt of this or that number of billions. That is what is now meant by a managed economy. The managed economy has become one in which the Government manages to keep people from spending their own money as they please. Anyone who thinks that under such conditions we are likely to have prosperity and full employment is not in touch with the realities.

#### National Shell Game

Tell me how long the people, and notably the laborers, are going to fall for this shell game, and I'll tell you when the big postwar boom will get under way. Now they see their money; now they don't. People are now shell shocked. But when the war is in the bag, they will more and more demand their money's worth. They will be less and less willing to save. They will want more of a run for their money than they can get at 1 or 2%. Then they will buy and buy. They will not tolerate rationing. Prices will rise. Profits will grow.

The only way to get production increased in a free country is to let people earn and spend their incomes, and to allow prices and profits to increase. I am confident that unless and until these things are done, there will be no full employment or maximum production. With still more confidence, however, I predict that the American people will soon be fed up with the shell game which consists in giving them money and taking it away, without giving them anything they want in return; and I therefore go on to predict that something approximating the usual postwar sequence will occur.

#### High Civilian Demand

Already the trend of war production is downward, and is likely to continue so as a total. Prices of many materials will be easier for a time. The general manpower shortage will certainly be no worse.

But civilian goods production is champing at the bit. It has great possibilities, and requires little urging to expand with growing momentum. While the volume of effective war contracts is being reduced, the shortages of covilian good accumulate; and the purchasing power in civilian pockets expands enormously.

Aside from political handicaps (expressed in the easy-money policy, the full-employment notion, and postwar planning), never will a great war have ended with as much reason for a postwar boom as will exist in, say, 1948. Some of these reasons are:

(1) Hardly any new automobiles and electrical household equipment for four or five years.

(2) Hardly any new residential building, and the materials and equipment which usually go with it.

(3) The accumulated demand for a great variety of consumer goods (e.g. silk and nylon stockings).

(4) The total business capital of all active corporations (net worth) is far below pre-war levels and requires expansion.

(5) The estimated total income paid to all individuals has risen from about 71 billion dollars in 1939 to around 150 billion dollars now.

(6) There has been an enormous rise in bank deposits, and an actual decrease in bank loans.

(7) Private debts have been reduced by about 34 billion dollars.

(8) Installment credit has been reduced to a minimum.

(9) Many business concerns have greatly strengthened their financial position.

#### Time-Table for Expansion

On top of these facts, we now find signs of a more favorable political climate, to the extent of tax provision for a two-year carry-back of operating losses and unused profits credits, a fair war contract termination bill, and a reasonable assurance that surplus war property will be wisely disposed of.

And don't forget the building cycle. Building activity has fallen to levels which closely approximate the

minimum.

Studies of employment, including both civil and military, indicate that the probability is that with the coming of peace the following developments may be expected (barring collectivist experiments):

1. The number employed in war industries and in the armed forces will decline rather sharply for about three years (say through 1947).

2. At about the same time, civilian employment in productive industry will expand, but more grad-

(Continued on page 298)

### RECONVERSION PERIOD TO BRING PRICE DECLINE

Wholesale price drops may average 5% o 10%, followed by recovery and stability — Gain will not bring runaway prices — War expenditures nearing peak — Government surpluses of civilian products put at \$15,000,000,000

By A. W. ZELOMEK
President, The International Statistical Bureau, Inc.

T was just three years ago that I had the pleasure of appearing before you at your annual Convention. It may be coincidental or it may be deliberate, that the subject that you want me to discuss today, "Price Trends and Outlook," is closely related to my talk in May, 1941, in Chicago, "Inflation, Deflation and Inventory Policy.' invitation for me to speak on a similar subject suggests that your committee must have gone back to reread the 1941 speech, and decided either that I was entirely right, in which case I might repeat the experience; or entirely wrong, in which case you can be right by doing the opposite of what I recommend.

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As a professional business fore-caster it is essential for me to review my forecasts from time to time. If I don't, my clients do it for me. In this case I did it myself, and I am happy to say that I find nothing of which to be ashamed. However, a forecaster cannot rest on his past record. He must continue to diagnose developments in the light of changing conditions.

You will agree with me that conditions have changed since May,

1941. What is more important, the future promises to be equally changeable. We are living in a world where economic, political and social developments of yesterday may be obsolete tomorrow.

#### At Peak of War Economy

We are at the stage in our war economy where it is difficult to make a single forecast to cover a period of several years. On the one hand, there are many indications that we are at the peak of the war economy or have passed it. On the other hand, we still have to bring the Nazis to their kneesalthough that may be nearer than generally realized—and after that we still have a dangerous foe to lick, which will probably take nine months or a year longer. Therefore, we cannot liquidate all the war features of our economy at the end of the European war, and yet we do not need all the equipment to fight the war in the Pacific that we needed for the war in Europe.

There is also the question of how far Government controls will be relaxed or eliminated with the end of the European war and while the Pacific war is still being waged. We must also determine how soon our military government will allow free enough rein in the liberated countries to resume normal civilian activity there.

Despite these uncertainties it is possible to indicate probable price trends between now and the end of the European war, and between the end of the European war and of the Japanese war, during what I term the reconversion and readjustment period. It is also possible at this early stage to indicate some of the postwar prospects for prices, after the end of both phases of the war. Within the time permitted me I shall devote most of my discussion to the period between now and the end of both wars, German and Japanese.

In line with my general policy of sticking out my neck first and then explaining, I will indicate here what I expect

1. The peak of wartime wholesale prices has probably been seen. Any further gain in the composite index will be very nominal. It is certain that agricultural prices, for example, which have probably advanced the most, have already seen their peak, and in view of govern-



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ment price control, semiprocessed and processed items will hardly advance much further.

#### Reconversion Period Price Declines

2. Prices will decline during the reconversion period between the end of the European war and of the Japanese war. The decline may start in earnest before the armistice is signed. In wholesale prices the decline may easily average 5% to 10%, with the reaction more marked in some groups. I might point out that very few groups will escape lower levels during this decline, but that the main generating force will be a decrease in agricultural commodities. The decline will vary with the economic position of the individual commodity, rather than according to price control. However, the decline in agricultural prices will be retarded by loan and parity levels.

3. Prices will then recover. This gain will be considerably less than the inflationary gain in 1919-20 and will not result in runaway prices. It will be followed by a stable price

trend for 3 to 5 years.

#### Influences Are Weakening

With the peak in the war economy reached, it is natural that priceraising influences are weakened. A study of the factors responsible for the wartime price rise will show very clearly that most of them will have lost their influence as soon as the European war is over.

I do not include the startling increase in the volume of money and currency, considered separately, as a major factor. People have gen-erally bought what they wanted because they had the money to do so, but they have not tossed their money away without regard to values merely because they were worried about inflation. It remains a potential rather than an actual threat. While there may be exceptions, I doubt that business demand occasioned by deferred depreciation, replacement and capital requirements, and foreign demand for rehabilitation will offset declining military needs immediately after Germany is beaten. Certainly at that time also there will be an end to price rises to encourage production or imports, and to the building up of stock piles.

In some lines productive capacity is still growing as a result of completion of wartime emergency expansion. Furthermore, in many industries productive capacity will continue to rise after the war as

fast as new processes and discoveries are applied to the production of civilian goods. Hence, production capacity is reaching unprecedentedly high levels just when peak war requirements are on the verge of turning down, thus reversing the lag in output relative to consumption of many commodities.

Finally, the import situation is already improving and will become very much more favorable as the war approaches its end. After that, of course, we can have foreign supplies in any quantity that our international trade and political policies

will permit.

It is true that some costs of production will not immediately decline, but will rise further or readjust only after a considerable lag. This will be the case of wage costs and overhead, both of which will retard

the price decline.

During this century nations and groups have attempted to circumvent the law of supply and demand. This has proved to be ultimately impossible. The history of the Stephenson Act in rubber, the Japanese silk control in that commodity, our own Federal Farm Administration control of cotton, are all too recent to need elaboration. In each instance the increasing supply of the commodity ultimately broke down the attempted controls. We must therefore determine the position of supply and demand in coming months.

#### Era of Excessive Supply

While we find that demand prospects will continue favorable for a while longer, the outlook is definitely for a sharp decline after the end of the European war. However, of still greater importance in this price equation is the supply outlook. We are definitely going into an era of excessive supply. The shortages of today will become the surpluses of tomorrow. Commodities that are now inadequate will become plentiful. I doubt whether anyone has a true conception, for example, either of the increasing production of raw materials that has developed in this country, or the output we have encouraged abroad and which is available to us. These supplies will continue to press on the market. Having just finished a study of war surpluses, I am really surprised at the prevailing belief that shortages will develop in the readjustment period.

There is no unanimity of opinion regarding the extent and duration of the decline in prices between now and the final liquidation of the Japanese war. Those who say that

prices may not decline point to the tremendous pent-up demand in this country and abroad. While prices did gain during the war, they point out, they were well controlled, and as controls are removed the prices will reflect the advances which have occurred during the war period. It is further contended that supplies are not burdensome and that production cannot be increased rapidly enough to take care of needs. There is also the usual stress on the tremendous savings, and easy credit, as helping to sustain demand.

Against this there is the fact that out of our total production at least 55% is for war, and that over half of this will be liquidated as soon as the European war is over. Furthermore, public demand is not going to manifest itself immediately. Even though there is great pent-up desire for many things, much of it will not be translated into demand when there is uncertainty about employment, especially after the weekly income of those still employed is deflated at least one-quarter by the elimination of overtime and Sunday work. Job security is probably more important from the standpoint of normal buying than accumulated savings.

#### Civilian Goods Surplus 15 Billions

Moreover, Government surpluses which can be used for civilian purposes may approximate 15 billion dollars. While these may not be pressed on the markets, they will continue to overhang them. This amount is exclusive of Government holdings of important war materials abroad.

In addition, foreign producers have expanded output and will strive to increase their own markets. While European needs will be great, they cannot be expressed in normal demand until the European countries become politically stabilized. Foreign balances in this country are large, but not in relation to needs, and it is questionable whether all bars to the use of these funds will be lifted immediately and credit liberally extended.

It is true that the monetary structure is inflated, in that the amount of money in circulation is huge, demand deposits are large and the debt structure is heavy. Nevertheless, the public has been smart and has not fallen for the constant talk of inflation wherein the dollar will buy less and less. With bad fiscal management in the postwar period, however, this could become an important factor.

## SELECTIVE COMMODITY MARKETS

Military considerations still dominate commodity markets. Basically, the era of shortages is nearly at an end, but generalization is not a reliable guide

> By HERBERT N. McGILL President, McGill Commodity Service

THE principal shortages today involve a few but extremely important commodities, primarily lumber, paper and pulp, rubber, leather, and cotton goods. While nothing is assured under the stress of warfare, there are signs that the era of basic commodity shortages is destined to end much sooner than generally anticipated. In fact, it is likely that the corner is now being turned. Sometimes it is difficult to understand how shortages can exist in view of the mammoth amount of raw materials and finished goods produced during the past two and three years. The Federal Reserve Index of Industrial Production in the space of four years has skyrocketed around 112%. However, when we realize that national defense expenditures jumped from \$1,711,000,000 in 1940 of \$6,301,000,000 in 1941; \$26,011,-000,000 in 1942; \$72,109,000,000 in 1943, and a proposed \$88,500,-000,000 for 1944, we have some idea as to what over-all production is directly and indirectly entering war channels. In the month of April war expenditures totaled \$7,346,000,000 which is at an annual rate of over \$87,000,000,000.

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The fact that the extreme peak in war production was reached last October and November is of outstanding significance. With the exception of planes, war goods are being turned out in full measure and this is particularly true if we progress on the premise that invasion will prove successful and Germany will capitulate before the curtain

drops in 1944. Thus despite the serious manpower problem and signs of greater industrial hesitation, there is a growing prospect that two important developments will materialize during the closing half of the year: First, a greater shrinkage in war production as cutbacks gain momentum, and second, the diversion of war facilities to civilian manufacture.

#### Military Factors

All eyes are now focused on invasion. An unprecedented armed force has been built up, trained, and adequately equipped. In March the movement of export freight other than grain and coal, but including not only commercial shipments, but lend-lease and our own Army and Navy supplies, reached a new high of 155,085 carloads, up 54% above the same month of 1943, and nearly three times the 1940 average. Most of the equipment needed for the new campaign is already on the scene. The question whether invasion proves to be an overwhelming and abrupt success or a slow, arduous, costly, and extremely difficult operation will undoubtedly be answered during the next few months. In the event the invasion clicks according to schedule and Germany proves weaker than generally assumed, the stops will be pulled, production of war equipment cut down, reconversion speeded up, and some general realization of restrictions pertaining to production of the much-needed civilian goods.

Contrariwise, if the invasion undertaking bogs down, then there is no alternative but another burst of production of war goods to replenish supplies destroyed. The way matters now stand, until this extremely important issue is settled one way or another, it is not difficult to understand why we must expect an increasing degree of hesitation. It is logical to assume that invasion will succeed and WPB has definitely stated that immediately after the close of the conflict in Europe, at least 35% of war facilities will be turned over to civilian channels.

In maintaining a perspective as regards the availability of materials remember the underlying trend of industrial activity is now downward, and the latest Federal Reserve Index stands 7 points below the peak reached seven months ago. Immediately following the collapse of Ger-







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many a drop of 20% more should eventuate with marked rapidity. Irrespective of the snap-back in the output of civilian goods, when the clock strikes twelve with the end of warfare in Japan, another contraction of 20% will probably be witnessed, thus wiping out between 40 and 50% of the mammoth industrial expansion chronicled during the first four years of the war period.

All the post-war planning in the world can only cushion the inevitable shifting from a war to a peace basis. The Government has been the principal buyer of commodities for military and lend-lease purposes. That the end of the war will find tremendous stock of goods in government hands is taken for granted, but it also marks a shifting from the principal buyer to either a major seller or a hoarder of commodities. In view of the economic changes under way, it is not surprising that industry is entertaining a more and more cautious attitude as regards inventories. This discussion is confined to the availability of five important commodities: The first is

#### Aluminum

Only a little more than two years ago aluminum was one of the most critical metals, whereas currently aggregate stocks are top-heavy. Before the plan to curb production was inaugurated, annual producing capacity had reached the huge total of 1,125,000 tons, which compares with an actual output of only 163,545 tons in 1939. This country today can produce one and a half times the total tonnage produced in the whole world just prior to the war. There is hardly any problem here of availability, and due to consuming restrictions as regards civilian utilization made necessary by the stress of warfare, the end of the war will find aggregate stocks of relatively burdensome proportions. Incidentally, this commodity illustrates the basic point that the law of supply and demand is still functioning, as the price list today stands lower than was the case in August 1939.

#### Lumber

The story of lumber is diametrically opposite to that of alumium, in that stock were adequate at the outset of the war and currently there is a serious shortage. Total softwoods as well as hardwoods in eight producing areas showed stocks at the mills at the end of 1940 at 7.554 million board feet. Stocks at the turn of this year were down to 3,578 ntillion board feet, representing a shrinkage of 53%. Lumber today is one of the most critical war materials, and this is not surprising when it is realized that of the 35.5 billion feet which will be required this year, 50% is destined to go into direct military channels, whereas 25% additional will go into indirect military use. This leaves an extremely small balance to meet essential civilian needs.

The lumber industry is operating with less than 80% of its pre-war labor supply and a considerable proportion of the manpower available is inexperienced and below pre-war efficiency. Throughout this year to date new orders and shipments have exceeded output. Hence, it is obvious that over-all stocks have reached new lows.

Recommendations involving higher price ceilings, draft exemptions for workers engaged in logging, and additional supplies of truck and replacement parts will aid materially in re-establishing a more favorable statistical position from a longerrange standpoint, but so long as there is an insufficient supply of labor, transportation facilities, and producing equipment, and so long

as the Government is utilizing more than 50% of all lumber for the packaging of war goods, it requires a dyed-in-the-wool optimist to anticipate any basic improvement in the statistical position during the months directly ahead. While there are many who will disagree with our conclusion, it is our contention that the lumber shortage will outlast the war.

#### Steel

Steel represents one of the principal cogs in the war production machine. The strained over-all producing capacity is without precedent and whereas there were definite signs of an easing in the supply-todemand ratio around the turn of the year, now the new burst of demand, particularly for shell steel, has changed the picture considerably. Demand for shell steel will exceed 500,000 tons during the third quarter and will probably jump to 600,-000 or 700,000 tons in the fourth quarter. Currently, there is a mounting backlog of unfilled orders. Cutbacks have proven far more limited than were anticipated earlier in the year, and finally, hot weather is bound to adversely affect production. Under such conditions the stage is certainly not set for any realization of restrictions pertaining to the lesser essential consuming industries.

Briefly, for the near-term months, record-breaking output will continue to move rapidly into war consuming channels, and the war program will not at any time be impaired. Existing conditions in the ferrous metal industries may be regarded as a sound criterion for the third and early fourth quarter periods.

#### Cotton

As far as the raw cotton situation is concerned, there is little ground

for apprehension. It is definitely now badly pinched between costs known that aggregate stocks are fully adequate, on May 1 totaling around 13,161,000 bales as compared with 13,572,000 a year earlier. Total disappearance during the first nine months of this season has dropped to 8,742,000 which is a sizable contraction from the 9,601,000 a year earlier. It now appears that for the season the aggregate will be 1,000,-000 bales less than last season, which was, roughly, 11,100,000 bales.

The 1944 crop is progressing satisfactorily, and will be in close alignment with last year's output. Loan entries have declined, and the outlook for free cotton has brightened. As a matter of fact, the loan stock from the 1943 crop promises to reach only 3,500,000 instead of 4,500,000 bales, which was indicated earlier in the year. Hence, supplies of free cotton at the end of the season will approximate 4,250,000 probably bales which is quite a contrast to the smallest domestic stock of free cotton which at the end of the 1939-40 season was only 1,736,000 bales.

The situation in cotton yarns and finished goods still remains acute, and we question whether the 48hour week will lift cotton goods output to any appreciable degree. The reasons are quite obvious: First, the growing shortage of manpower, the tendency toward absenteeism, and second, rising costs and restricted profit margins which work against maximum operations. There is no question that the industry is

and relatively low ceilings.

As long as the production of both combed and carded yarns continues to diminish, there cannot be any escape from growing hardships and more acute shortages. Government requirements continue heavy, and the truth of the matter is that production of finished goods is falling far behind the over-all requirements of the nation. The situation is more critical than surface factors indicate and the real pinch in the supply status of yarns and finished goods will not be felt until the closing half of the year.

#### Copper

In the non-ferrous metal group, available stocks of aluminum, magnesium, zinc, and quicksilver are fully adequate, and the end of the war will find reserves of relatively heavy proportions. However, in the case of tin, lead, and copper, the supply situation leaves much to be desired. Last year the supply of refined copper reached the huge total of 1,828,000 short tons and of that tonnage 614,000 tons were received from foreign sources and 90,000 tons were refined from scrap. Latest data show that United States refinery production for the first four months of the year was down to 374,307 tons which represents quite a sizable contraction from the 397,589 tons noted for the same period last year. On the other hand deliveries for the first four months reached a new high of 537,271 tons exceeding the 535,-405 tons reached a year earlier. Thus, not only have stocks in producers' hands dropped to 38,382 tons on May 1 as compared with 65,829 a year earlier, but the MRC stockpile is now probably well below the 200,000-ton mark in contrast to around 250,000 tons only a few months ago.

Washington is still striving to keep production up, which is not an easy task in view of the manpower situation. Frankly, a further sagging in domestic output appears inevitable. One important step was recently taken to assure ample supplies, namely, refined copper shipments to Russia formerly made by this country will henceforth come out of the United Kingdom's supply.

In addition, a drive is now on to increase production in foreign producing countries. It stands to reason that war requirements, particularly at this vital stage of Global War II will continue on an inflated plane. Thus, obstacles such as the tight supply status and manpower and transportation shortages will work against any relaxation of restrictions pertaining to the lesser essential lines.

In summary, the availability of commodities is on the threshold of of a basic improvement, but first and foremost it is clear that abundant supplies and the abolishment of consuming restrictions are contingent on a successful termination of warfare in Europe.













session of the N.A.P.A. convention, declared that if the government tries to dispose of surplus supplies through the regular channels of trade it will retard the normal peacetime industrial production of the country by at least two years. He predicted that any such plan, however well conceived and administered, would have to be rescinded within a few weeks, for we cannot afford any such an obstacle to the industrial recovery. As a practicable alternative, he

Mayor F. H. LaGuardia of New

York City, addressing the opening

proposed that such reserves be disposed of primarily to Federal, state and local government agencies or sent abroad on lend-lease. Food supplies could go in considerable quantities for rehabilitation of devastated countries, providing relief both abroad and at home.

"Mark it off now," urged the Mayor. "It would be a good investment. Get it off the market here. at cost, and help people to resume normal trade conditions.

"We learned a great deal and got some experience after the last war. when we didn't do a very good job in disposition of supplies," he said, recalling that he had been a Member of Congress during that period. "War is wasteful, and disposition of this enormous reserve is just a part of the war. I believe-and I am not talking selfishly—that some of these supplies might well be allocated to agencies where all the people are concerned.

### PROGRESS BY SUBSTITUTION

Out of sheer necessity we are crowding a century of technical, trade and economic progress into a few short, intense years

By COL. GEORGE S. BRADY Ordnance Department, Services of Supply

FULLY half of the material substitutions that have become necessary since the start of the war have been real improvements, either because the new material was better for the job, or because it forced redesign and reconsideration of the product so that when the old material is again available it will be used with better effect.

Substitution has taken a different trend in America than it took in Germany. Three years ago the German word 'ersatz' was coming into use among our manufacturers, in a way that indicated that they expected to have to accept inferior materials to replace shortages. To say that producers of raw materials met the challenge does not tell the whole story. What happened in these three years is that designers have torn themselves away from their natural conservatism, purchasing officials have kept alive every available material that offered possibilities, and material producers have redoubled their research activities.

#### Developing Resources

Looking at the whole panorama since the beginning of the war, we can see thousands of little bricks of progress which have arranged themselves into an industrial edifice that was not there at all in 1939.

Other effects of the war on the material supply are the tremendous increases in production that will make some materials available in greater supply; the erection of production facilities in geographical locations where it might have taken generations to initiate them in normal times; and finally, the development of materials resources in foreign countries whose industries were backward before the war.

The opening up of the continent of Africa has had no equal in history. Its effect on the world will be as great as when the Spanish threw open the whole of South America in the 16th Century changing the entire method of life in Europe. The common people of the world will not be fooled today as they were in 1919 by the siren song of 'getting back to normalcy.' The teeming millions of Asia, Africa and Malaysia will never again submit to the old time trade exploitation of the white races. Moreover, no less than 10,000,000 of the brightest and most ambitious of our own young men will be coming back into industry and trade with a broader world viewpoint than any group has ever had before.

You will again hear the specious arguments of the advocates of self-sufficiency. But the doctrine of self-sufficiency is contrary to a doctrine of world prosperity and world peace. If we want to supply manufactured articles to the world, we must plan to buy the raw materials where they can be produced most economically.

There is no reason why we cannot do better business after the war with the tremendous number of new products if the leaders of governments will have the vision to coordinate some of the advanced ideas into laws that will enable us to obtain the raw materials where they are most economically mined or grown. We have heard much about democracy being a system of rule by law rather than a rule by men. Then why does that not apply to international affairs as well.

We already have international trade agreements and quota systems in sugar, coffee, and lately one in wheat. Such systems permit each country to know in advance what the foreign demand will be for its products. Before the war there were quota systems in rubber and quinine, but these were systems of private monopolies and were more vicious than any of the domestic private monopolies that existed before the passage of the anti-trust laws. International control is a function of gov-



ernments and is a dangerous thing in the hands of private cartels.

Every manufacturer today knows that the old list of 27 strategic materials was never more than an idealits's dream. For months after Pearl Harbor, when shipping was scarce. we felt the effect on our manufacturing in the lack of foreign raw materials whose names were not even listed in common encyclopedias. During the war we dropped many of our accustomed sources of supply, either because the producing countries were in the hands of the enemy or because of inconvenient ocean freight hauls. We opened up new sources of supply of manganese, copper, chromium, balsa wood. mahogany, quinine, vegetable oils, and a hundred other things.

#### Shifting Sources

Our source of soybeans shifted from Manchuria to our Middle West. Since the war about 100,000 cork seedlings have been planted in California, and the nursery at Superior, Arizona, is growing 50,000 cork seedlings annually. To replace the heavy tonnage of copra from the Far East we developed other vegetable oils in Africa and South America. We replaced Manila fiber with fibers from other countries.

We have opened up in Brazil an iron ore region that contains 15 times more high grade ore than remains in the Lake Superior region, and this Brazilian ore is readily accessible to our eastern seaboard. We found a new source of tantalite in Brazil, and 8,000 miners are working

in 400 mines to produce this ore for us. In the face of competition from the newer superfine plastic fibers and from Nylon, Japan may have a hard time getting back its trade in silk, especially since the industry there lived only by starvation wages.

The new tapered Nylon bristle may also permanently replace the Chinese bristles. Readjustment is the first thing that will strike the materials supply situation after the war.

Will the new supply sources be dried up in the old arguments of oversupply, or will all these new fountains of supply be directed by world planning to feed and clothe and provide comforts for the billion people who before the war were lacking in the comforts of civilization?

### HANDLING CONTRACT TERMINATIONS

Eight responsibilities that the purchasing department must meet on termination day

By STUART F. HEINRITZ
Editor of PURCHASING

I N the normal course of business operations, purchase contracts are made with the expectation that they will be carried through as agreed. This is the essence of the contractual relationship, and it is enforceable by law. On the other hand, as every purchasing agent knows, any contract can be cancelled-by mutual consent, or as provided by the terms of the agreement, or by default of either party in the performance of his specific obligations under the contract, or for the convenience of either party, which is the euphemistic way of describing willful default. In case of default, whether willful or not, the law provides penalties against the party at fault so as to protect the party who is willing and able to go through with the original agreement and to indemnify him against any loss that might be incurred through the cancellation.

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But in dealing with war contracts, we have quite a different situation. There is a high probability—roughly one chance in three—that the contract will be cancelled in whole or part before completion, and cancelled for the convenience of the government as buyer. In view of that probability, the method of settlement is prescribed under the terms of a termination clause which greatly limits the buyer's liability and correspondingly limits the contractor's normal legal rights in respect of recovery and payments.

Reference to these limitations is not to be construed as implying any lack of equity in the present arrangement. It is simply the recognition of an extraordinary condition to which the established rules and procedures for normal peacetime transactions do not well apply. It calls for special handling, special terms. There is nothing in contract law or usage to prevent the making of an agreement explicitly adapted to any special set of circumstances. It is done every day in the ordinary course of business. But it has never been done on such a broad scale, affecting so great a volume of industrial activity and so many business relationships as to make the special case the prevailing one, and to color the entire business and economic situation and outlook.

#### Purchasing's Part

Many aspects of these contracts are outside the purview of the purchasing department. Our first job, therefore, is to limit the subject, for purposes of this discussion, to the matters in which the purchasing department is involved. But in so doing we cannot rest on technicalities of prerogative and authority, for a great many points on which the purchasing officer has had no voice in the original decisions, fall to his lot for eventual adjustment. The basic contract, whether prime or subcontract, has doubtless been negotiated by the sales department or by management itself, and it may turn out to be not even a contract, but a letter of intent, or possibly the verbal authorization of a contracting officer who has meanwhile been transferred to service in New Caledonia; in some cases the subcontracting arrangements have been similarly handled, with a prodigal disregard for price, and larded with fantastic promises that even the most complaisant government auditor is not permitted to sanction, though it was assumed that Uncle Sam would foot the bill; the schedule of materials may have been compiled and authorized by planning or production on an over-liberal basis, just to be sure that there would be plenty on hand; cost factors may have been loosely construed in the accounting division; and extraordinary financial commitments that are out of all proportion to everything except a highly vulnerable war contract have been blithely sanctioned by the treasurer. Oh yes, anybody can buy. But when the day of termination comes, the adjustment of all these problems is dumped into the lap of the purchasing agent.

Consequently his responsibility starts with a thorough familiarity with the contract under which his company is working, for better or worse. Normally that isn't any of his concern, for the contract merely sets up a manufacturing schedule which, in turn, sets up the purchasing program that is his particular responsibility. There are some companies, even, now, who regard the purchasing agent as "impertinent" for inquiring into this detail of the company's affairs. But if he is to be responsible for commitments under that contract, he must know the conditions and limitations which the contract places on the customer's responsibility for these commitments.

Corollary to this is his second responsibility of becoming familiar with the applicable portions of the Termination Accounting Manual,

which is incorporated by reference in the Uniform Clause, and sets forth what items of cost and inventory may and may not be allowed in the settlement.

Third, and still concerned with the customer's side of the transaction, he ought to get acquainted with the appropriate contracting officer for his district, who will pass on his company's claim in the event of a termination, either directly or as it is a part of a eustomer's claim. From this officer he should learn what records and supporting schedules will be required when a claim is submitted. It will be very helpful if the officer has an understanding of the company's operations and accounting methods, and if the latter are approved before any question arises.

#### Inventories and Orders

With the fourth step we come, at last, to an activity more directly and logically related to the province of procurement. Based on the information derived from those which have gone before, it is to keep his inventories and inventory records in line with the requirements of the contract at any given point. Purchasing in these latter days has become more and more a matter of accurate scheduling, and termination settlements are based upon the observance of this principal. This calls for the exercise of the purchasing agent's prerogative of reviewing all requisitions in the light of the actual need. It calls for accurate scheduling of deliveries. Right now it means that the suppliers who have been impressed with the fact that a June 1 delivery promise doesn't mean June 15 or July 1, must be made equally aware that June 1 doesn't mean May 1 or May 15. Otherwise the buyer may find himself with materials on hand which will be disallowed in a settlement and will become his company's own private headache.

Along with this responsibility for inventory is that of records and control to support whatever claim may be made for materials and purchased parts. Some companies go to the extent of physically segregating war contract materials in the stockroom. earmarked for particular orders. This may be an extreme precaution; but remembering that they must be so segregated and tagged if a concellation is received, and held pending the settlement of the claim, it is well to be prepared.

The purchasing agent's fifth responsibility has to do with his own purchase orders and contracts. Bearing in mind that he may be called upon to cancel them in the event of a termination or cutback, he should take cognizance of that probability with a termination clause of his own, coordinated as closely as possible with the terms of his own company's contract with its customers. This is not always easy to accomplish. Suppliers are understandably reluctant to agree to any curtailment of their normal rights under a contract, or to make their settlement dependent on the outcome of a negotiation in which they have no part.

But can the purchasing agent afford to commit his company in this fashion under circumstances which, as we noted at the outset, call for special handling? However fair and liberal the government contracting agency may wish to be in effecting a settlement, its legal responsibility stops with the prime contractor, and that responsibility is clearly set forth in the Uniform Termination Clause. At the present volume of operations, most companies are extended far beyond their actual resources. The soundness of their commitments, and of their own position, depends altogether on the completion of their contract, and our discussion this morning is based on the assumption of a strong probability that the contract may not be completed. If that probability becomes a reality, without having made adequate provision in respect to purchase commitments. the result in many cases will be not only to forfeit any prospect of profit, but to wipe out the company's whole capitalization and resources.

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#### Preparing the Claim

The purchasing agent's sixth responsibility, since he will be called on to get the supplier's claim and in many cases to make the settlement which becomes a part of his own company's claim, is to see that his suppliers are prepared to submit these claims promptly and ade-

A number of the larger companies have done an outstanding educational job in preparing their suppliers for the compilation and submission of cancellation claims. They have detailed the records and data that will be required, and how they are to be put into the summary and supporting schedules. Some of them have gone so far as to furnish the forms on which this information is to be entered. This last step is not absolutely essential, but it should be noted in passing that it may help to expedite the collection of claims, and the uniformity of analysis and accounting procedure when a standard method of presentation is used may save far more than the cost of the forms.

Prompt action and well supported factual information are the keys to satisfactory termination settlements. When a cancellation notice is received, the purchasing agent is asked to do three things: to cancel immediately all outstanding orders or other purchase agreements pertaining to the contract; to give an accounting of all materials and purchased parts on hand, which have not yet entered production; and to secure, as promptly as possible, a proper and final claim from his suppliers. If he is prepared, through the several steps outlined, this should be a relatively simple task, and







should help to put his company in position to effect a quick and favorable settlement. What may be even more important, he will have safeguarded his company against the greatest potential danger in the whole termination program—the danger of inventory losses and the liability for purchase commitments. If he is not prepared, he is in a fair way to incur for his company all of the evils we associate with the experience of a quarter century ago, at the end of the First World War settlements dragged out over a period of four years or longer, costly staggering inventory losses, and the dissipation of profits and resources committed for the procurement of materials no longer needed.

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#### The Clean-Up Job

There remains one more responsibility before the final settlement is reached. This has to do with ma-

terials on hand, which, by the act of termination, are transformed from essential supply to surplus. To the extent that these can be disposed of, at cost or close enough to cost to satisfy the contracting officer, rather than included in the claim, the process of settlement will be speeded and simplified, and at the same time the threat and the burden of post-war surplus will be reduced by so much. Four general methods are open: return to the manufacturer for credit and for redistribution to useful service through the established channels of trade; purchase for the account of the company, for transfer to use on some other application; sale as surplus to some other potential user; or sale at scrap value. All four of these are distinctly within the provision of the purchasing department.

I do not want to leave the subject without reference to one more phase. We have been talking largely in terms of materials and money; the supplier whose order has been cancelled has appeared only as the party of the second part. Satisfactory purchasing depends altogether on satisfactory sources of supply. Supply sources consist of the materials we buy and the firm from whom we buy them. When a termination comes, the materials themselves are, for the time being, something we do not need. But in the days ahead, it it quite likely that we shall need the friendly supplier very much indeed. Nothing will be more helpful toward effecting satisfactory termination settlements than sound and cooperative relationship with suppliers. No settlement can be considered truly satisfactory if it tends to destroy or impair that relationship. We are all in this situation together. We must work together to get out of it as best we may and to build a better and stronger industrial world for the future.

# PREPARING FOR TERMINATIONS

A comprehensive organization and procedure simplifies the problem

By E. N. OSTERBERG

Purchasing Agent Stewart-Warner Corporation

**D**ON'T be lulled into complacency because the termination problem hasn't hit you yet. Prepare for it — now.

Our company was fortunate in that its top management had the foresight to organize for this inevitable headache, before it developed into a case of migraine. The first step was taken by our President, in appointing an Executive Vice-President as Chairman of a Termination Committee. This provided the required authority to enforce subsequent procedures and instructions.

The first meeting of the Committee remained in session until all work necessary to the completion of a claim had been delegated to the proper departments. These departments then set up their individual man, or group, to guarantee prompt and thorough discharge of that department's termination responsibilities.

Responsibility for enforcement of routine was delegated to our Con-

troller. The Assistant Controller was made responsible for the coordination and flow of all terminated contracts or cut-backs. The Controller's first step was to devise controls to insure the completion of all claims as rapidly as possible, and to follow through until such claims were properly billed. As cancellation notices were received from the Sales Department, by the Controller's Office, a register was set up in which all claims were listed numerically, according to case numbers. This case number is the reference number used by all departments thereafter. The status of each claim is kept up to date and a report is issued monthly, reporting the progress of all claims. The Termination Committee meets once each month to discuss the program, or lack of it, as reflected by the Controller's Report.

The Sales Department was charged with the responsibility of distributing the notice of termina-



tion to the proper departments. The first notice is given by telephone and followed up by a written notice containing all the pertinent information relating to the order.

The Sales Department also handles the acknowledgment of termination to customers, approves cancellations accepted without charge, bills the claims after completion, and issues credit when material is withdrawn from cancellation inventory.

The Production Planning Department carries the important responsibility of work stoppage on all parts and assemblies affected by termination.

Existing production records were reviewed and additional forms were created to implement and insure proper and immediate disposition of cancellation notices as they were received from the Sales Department. Specific individuals were assigned to an inventory crew, who were thoroughly instructed in the methods to employ in counting, segregat-

ing, identifying and finally, storing the inventories. Space for storage of inventory was set aside, distinctly separated from our storage space for current parts and material.

Records and controls for the withdrawal of inventory from cancellation stock were set up to insure proper notification to the Controller's and Sales Departments for pur-

poses of issuing credits.

In our company, the Expediting Department works under the supervision of the Production Planning Division, but necessarily, in close collaboration with the Purchasing Department. The Expediting Division originates all cancellation notices to suppliers, either by telephone or telegram. This is followed up by a formal change notice and letter, accompanied by cancellation forms to be used by the supplier in pre-senting his claim. This Department also expedites the return of the claim and when received, it is delivered to the Auditing Department for a check to determine the accuracy of extensions, additions, etc.

The Factory Superintendent's Office fans out the information received from their copy of the termination notice to the various factory departments involved. They perform the same function on Tools, Dies, Jigs, Fixtures and Equipment as the Production Planning Department performs on work stoppage of produc-

tion parts and material.

The Purchasing Department carries the responsibility for the negotiation relative to suppliers' claims and their approval of such claims is required before it is passed on to our customer. The first step relating to termination, was a review of our purchase order conditions. A new set of conditions was written and has since been re-written. Realizing that our suppliers would soon become extremely conscious of purchase conditions, we wrote our termination clause in rather broad language to encompass any new rulings or legislation which might arise. In a series of discussions with our Legal Department, we finished up with a termination clause consisting of ninety-eight words:

"The Buyer's contract, as amended from time to time, under which this purchase order is issued contains a termination clause, and if said contract is terminated by the Government without fault, Buyer reserves the right to terminate this purchase order. The Buyer's contract further contains a basis for compensation by the Government to the Contractor upon cancellation without fault, and such basis shall be used to compensate for any cancellation, without fault,

of this purchase order. All disputes are to be determined by the Contracting Officer of the Governmental Department which originated the termination of Buyer's contract."

We realize that the lawyers could have a field day punching holes in this brief statement. Nevertheless, it has satisfied 99% of our suppliers.

The Purchasing Department receives all suppliers' claims after the Auditing Department has made its check, and proceeds to analyze the validity of the claim. Purchase orders are checked against the claim to determine the relation of the total value of the cancellation, as compared with the size of the claim: the validity of tool charges, if any; the size of the inventory to the shipping schedule on the purchase order; profit; handling charges, etc. All correspondence relating to settlement of the suppliers' claims is, from that point forward, carried on by the Purchasing Department.

When all efforts have been exhausted in the direction of minimiz-

ing the claim by diverting material to other uses, either at the vendors' plant, or our own, or through sales, and the claim has been validated by inspection of inventory, review of second tier claim invoices and any other review that is necessary, the Purchasing Department signifies its approval of the claim, signs the invoice and passes it on to the Controller's Office. The extent of the check made by the Purchasing Department on suppliers' claims is dictated by the size of the claim, the reliability of the supplier, and the completeness or lack of evidence submitted with the claim.

It cannot be emphasized too strongly that you should prepare your claim in the same way as you would like to see it prepared if you were assigned to the job of approving it. The Termination Officer is more than anxious to give you an early approval and his greatest nemesis is the review of a claim that is likely to rise up and haunt him six months or a year later.—Keep it

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### NEGOTIATING SETTLEMENTS

Classifying claims by dollar value is a useful guide to procedure

By W. B. WIGHT

Administrator of Priorities Bausch & Lomb Optical Co.

R ecent policy releases from the Armed Services indicate that negotiated settlements will continue to be the general rule. Moreover, the tendency seems to be definitely in the direction of decentralization of the power to settle final claims. Decentralization means quick payments. Quick payments mean happier settlements with your subcontractors and suppliers. Formula settlements are out, but this should put no curb on the development of reasonable procedure.

Common sense should be the keynote in the handling of negotiations, and, in the final analysis, your contracting officer will call the balls and strikes. The purchasing officer will be the wing man of the battery, and he can usually go a long way toward winning this inning by pitching these three balls:

Strike One: Speed in the initiation of your cancellations is essential. Have a simple telegram prepared in blank so that all you have to do is address and insert the order numbers on which work will be terminated.

Strike Two: The "stop work" telegrams must be followed as soon as possible with a confirming letter of cancellation. This letter should be prepared in blank, too. It need not be long nor clouded with "legal lingo", but should contain:

A. Reference to the official termination document from the contracting agency

B. The effective date of cancellation

C. Specific instructions to:

 Acknowledge receipt of the termination letter indicating whether or not a claim will be filed 2. Segregate and list all materials, parts and special tools

3. Prepare a statement of costs incurred to date of cancellation

 Prepare a statement of expenses incurred as a direct result of the termination

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Strike Three: As soon as possible after the cancellation letter has been sent out, we recommend a preliminary classification of potential claims by size and type. This classification should put your subcontractors and suppliers in three groups: Those whose claims are likely to fall under \$10,000, those whose claims will fall somewhere between \$10,000 and \$50,000, and those whose claims are likely to amount to more than \$50,000. Since the requirements of the contracting agencies with respect to the form and amount of detail required will vary directly with the value of the subcontract, we now have a reasonable basis for determining the extent and type of negotiations to be introduced for each subcontract.

The purchasing officer must now face the following objectives: He must satisfy the requirements of the contracting officer in the form and detail of the final claim to be submitted. He must so prepare and carry out his instructions to suppliers and subcontractors that the required information will ultimately be delivered and he must be prepared to review the claims when finally submitted so that he may affix his signature to the certification of each claim for submission either to his own management or direct to the contracting officer. By following the dollar breaks, it is possible to so organize the work that it will require the least amount of expended time with a maximum accuracy in the final results.

On claims under \$10,000, assuming that the contracting officer is satisfied that the prime contractor's organization for the termination of subcontractors' claims is adequate, there will be relatively little audit on the part of the contracting office, so long as the contractor certifies to the reasonableness of the claim.

On claims in the \$10,000 to \$50,-000 group, your subcontractors will have to be more carefully instructed on the manner of presentation, as such claims must be transmitted to the contracting officer for his approval. Although these claims will be carefully reviewed in an office audit, the most important qualification will still be the prime contractor's certification of reasonableness.

On the other hand, the claim of \$50,000 or over will have to be handled in practically the same detail as the prime contract, even though the certifications of the prime contractor must still be included.

In the group of \$50,000 and over. we find it most essential to completely review with the inspection officer and the government cost representative, their requirements on the claim prior to the release of instructions to the subcontractor. In general, it involves the imposition upon the subcontractor of most of the requirements of the prime contract. It is the prime contractor's responsibility to terminate these claims, but in our experience, we have found inspecting officers and cost representatives willing, yes, anxious, to assist in these larger settlements during the pre-claim period, both in the plant of the prime contractor and the subcon-

In their purchasing departments, some of our larger prime contractors have established termination organizations, including personnel capable of conducting a reasonable audit of a subcontractor's or supplier's claim, but it is the smaller or-

ganization where no such termination group can be maintained to which I direct the following remarks. When you receive claims falling in the \$10,000 class and under, it is well to have a reasonable basis upon which to review that claim. If a claim is based upon a fixed-price subcontract, the costs should be submitted by the subcontractor broken down by material, labor and overhead. One check on such claims is to request from a subcontractor a statement of the number of hours expended on the work completed and not delivered. By dividing the total labor plus overhead by the number of hours expended, the claim may be reduced to a material and hourly rate basis. The average purchasing agent should have at his disposal information which would tell him at a glance whether or not this hourly rate should be questioned. For instance, in some territories, an hourly rate of \$3.25 to \$4.00 would, in most cases, be considered reasonable, while an hourly rate which figures 06.00 or \$7.00 would warrant further review.

If the subcontract was let on a labor and material basis, the form Continued on page 300

#### SHIPMAN MEDAL TO RUSSE



The J. Shipman Gold Medal, annually awarded "to one who by precept, example or distinguished service has contributed to the advancement of purchasing", was presented at the banquet to Dr. Frederick W. Russe of the Mallinckrodt Chemical Works, St. Louis. Thomas D. Jolly of Pittsburgh, Past President of N.A.P.A., Chairman of the Shipman Award Committee for 1944, and last year's medalist, made the presentation.

Dr. Russe, a graduate of Harvard and Leipzig Universities, has continuously supervised purchasing at Mallinckrodt since 1905, first as Purchasing Agent, and latterly in his capacity as Vice President and Director of the company. One of the "Old Guard" in purchasing circles, he was one of the organizers of the St. Louis Association and has been a tireless worker in both the local and national organizations for more than a quarter century. As a member of the national Executive Committee in 1921 and 1922, he was instrumental in setting up the present regional organization plan. During the same period he worked as a pioneer in education for purchasing, teaching classes at Washington University. He was chairman of the Chemical Buyers Group from 1929 to 1931, and has more recently been active on the N.A.P.A. Legal Information Committee and on the Legislative Group of the St. Louis Association, working for more efficient governmental purchasing. Aside from his work in purchasing, he is a Director of Chemical Alliance, Inc., and of the Associated Industries of Missouri, and Past Chairman of the St. Louis Section of the American Chemical Society, and has taken an active and useful part in civic and public service.

## BASIC RULES ON SURPLUS

Principles and policies which will guide the surplus disposal program

By LT.-COL. JOSEPH P. WOODLOCK

**Executive Officer** Surplus War Property Administration

Purchasing agents can give a great deal of help to industry and government by seeing that at least part of their normal requirements are filled from surplus items. It will be to industry's advantage to keep well informed about these surpluses as they become available for release.

Our policies are pointed toward decentralization of the actual mechanics of reporting surpluses and arranging for their disposal. It is expected that full use will be made of the regional offices of the disposal agencies. Reconstruction Finance Corporation has 22 such offices, Treasury Procurement has 11, and the War Food Administration has 5. The Maritime Commission will operate through its Washington headquarters.

Obviously, the development of procedures and policies by the Surplus War Property Administration will, at least to some extent, be a matter of evolution and will be modified by changing conditions. However, certain broad policies, based on the Baruch-Hancock principles, are already being put into

practice.

#### Four Basic Policies

1. A fundamental policy is to employ existing channels of distribution, because we believe that a more orderly process of distribution can be obtained through marketing organizations already familiar with particular products. For example, 10,000 surplus motor trucks are being sold through established automobile dealers.

2. Another fundamental policy is to test the market to determine fair prices. In the case of standard consumer products and raw materials listed or traded on commodity exchanges, it is a simple matter to determine a fair price, but it is more difficult to determine market prices for specialty items and for the many non-standard components of military equipment.

3. The Baruch-Hancock report emphasizes the importance of making surpluses available in small lots, so that small as well as large businesses may have an opportunity to

fill their requirements.

4. Another principle from the Baruch-Hancock study that has been incorporated into our policies is that of encouraging local ownership wherever fair selling prices prevail

In some cases, of course, plants are of such size that no one manufacturer can hope to utilize the total facilities. In such instances, the plants will have to be divided into smaller manufacturing units.

#### Prices for Surplus

A responsibility of the Surplus Administration Property which is directly related to disposal of property, is the establishment of general pricing policies to be applied when contracts are terminated. This responsibility was assigned to the Administration by the Joint Contract Termination Board, which determines all contract termination policies.

Contract termination pricing policies include: (1) authority to contract termination officers to sell leftover material in quantities that will permit small business to participate and facilitate disposal of small lots; (2) the privilege to sell to any buyer at 75% of the original cost, or at 75% of the price the buyer would have to pay if he purchased through a normal source of supply, whichever is lower; and (3) the opportunity for a contractor or manufacturer using such material in his production to buy it at the best price obtainable, after the market has been thoroughly tested.

The 75% price formula was deliberately set at a conservative level to discourage speculators from buying at a substantial discount for either long-term holding or quick turnover at an excessive profit. The 25% profit margin is not sufficient to attract speculators, but it is enough to encourage legitimate distributors, dealers, and continuing contractors to dispose of large quantities of material available at the time of contract termination.

Production equipment perhaps holds the greatest interest for industry. The Reconstruction Finance Corporation, disposal agency for production equipment, is now working on the many problems relating to the disposition of this property, with special emphasis on machine tools. This agency is enlisting the







advice of competent members of the machine tool industry in formulating its program.

This equipment is of particular importance to the United States economy, because we cannot main-

tain the desired level of low-cost mass production in plants using antiquated machine tools. Factories and machine shops now using equipment ten to thiry years old will find it hard to compete against

modern, high-speed efficient machinery. Manufacturers with old equipment will be able to find and purchase modern machine tools as war production tapers off and these tools become available surpluses.

# MARKETING SURPLUS GOODS

An outline of the policies and methods to be applied to consumer goods items

#### By CLIFTON E. MACK

Director of Procurement
U. S. Treasury Department

THE presidential directive of February 21, 1944—Executive Order No. 9425—established the Surplus War Property Administration.

Within the structure of the disposal organization is the Procurement Division of the Treasury. You have heard that name repeatedly connected with the words "consumer goods". Perhaps you have sought a specific definition of those words as they applied to property. Such a definition has now been made public through the Surplus War Property Administrative Regulation No. 1. It describes the type of goods which will be offered for sale through the Procurement Division.

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The list is rather lengthy; it covers eighty-three separate and distinct categories of materials. There is now available for distribution a mimeographed list. Bear in mind, however, that the list enumerates things we will have; not things we now have.

The list includes such things as Builders' Basic Hardware: Furniture Hardware; Glass Products; Chemicals, to the extent of being packaged for delivery to retail outlets; Abrasive Products; Industrial trucks, tractors, trailers; lubrication equipment; Laundry Equipment, Cash Registers; Broadcast receivers - in short, the list includes a wide range of the very things which yourselves and the companies you represent have been denied due to the stress of war. The list includes the complete, finished, fabricated, readyfor-use type of goods which you need in the daily conduct of your

As purchasers of surplus consumer goods, your most direct contact will be chiefly with the Regional Procurement Officers of the Procurement Division of the Treasury

Department, for the territory where you are located.

The actual, physical task involved in processing surplus goods from moment of declaration to moment of sale will be conducted by the Procurement Division of the Treasury through Regional Offices.

#### Government Comes First

Since the needs of the Federal Government for its own property must be considered first, the initial step of the Division in processing property is the preparation of catalogs for the use of all Federal agencies. If, for example, motor trucks are declared surplus, the first requirement is to advise other Federal authorities both in that area and elsewhere of the availability of such trucks. For the duration of the war, the armed forces will naturally continue to hold priority for any or all goods. The remainder of the Federal service is also eligible prior to public sales.,

During the period after we have notified Federal agencies of the existence of surpluses, our organization stands prepared to service the requirements of the Federal establishment from our stocks. Also, during this same period, surpluses will be available for sale or transfer to the Federal activities engaged in operations abroad: Lend-Lease and foreign relief.

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It is at the time when governmental needs have been supplied that surpluses first come directly into the industrial picture.

Contacting Buyers

Our Regional Offices at that time will report to Washington the fullest information on all surpluses available for sale. Through a commodity classification system which has been developed, we will be able to determine the extent of surpluses, of any given item, both within a region or in the nation as a whole. The size of stocks and condition of the market are both strong factors when considering a method of sale.

Through the press, through trade journals, through the informational mediums maintained by the more than 2,800 trade associations in the country, every effort will be made to acquaint purchasers with what we have for sale. Although the phrase has become shopworn from excessive usage since last February, I repeat that the sales operation will be conducted as though in a "gold-fish bowl." By this I mean that the details of transactions will be public.

#### Methods of Sale

As for the sales methods being used; these include both negotiation and the formal bid system. Negotiation does not imply the elimination of competition. It is merely a faster way of doing business and sometimes lends itself more suitably to the disposal operation.

Since it is our policy to dispose, wherever possible, through recognized trade channels, it is quite possible that on many sales we will go back to the regular manufacturer of such goods. If not there, we will contact the individuals all along the chain, involved in bringing manufactured goods to the user: the producer, the wholesaler, the retailer.

All disposal methods and disposal operations must be developed so that they are in complete concert with all existing governmental controls. If an item is under an O.P.A. ceiling price, we cannot dispose of that item at any great price than the ceiling. We fully recognize that, in sales to establishments which will in turn sell to the consumer, an allowance for profit must be made.

If any item which we have for sale is under other governmental controls, these must be observed. For example, the lists of materials which can move from hand to hand only with government permission are still quite necessarily long. The

Redistribution Division of the War Production Board is consulted frequently by us. They recommend and certify purchasers; we conduct the sales operation.

Our methods in such cases are clear and simple. By the maintenance of a close liaison with the W.P.A. Redistribution Division, they are aware of what goods we have available and we are generally cognizant of the demands being made upon them. When these conditions match—when a supplier elig-

ible under present controls requests permission to buy an item surplus to us-that supplier is put in immediate touch with our Regional Officer having jurisdiction over the property. The actual sale may be consummated rapidly.

## REDISTRIBUTION POLICIES

Every pound of surplus that finds a market now relieves a future threat

#### By COL. C. R. BAXTER

Director, Redistribution Division War Production Board

THE War Production Board, assisted by its numerous Industry Advisory Committees, and with a background of experience in this field, is being called on to work with the Surplus War Property Board and with American industry in making the numerous policy decisions needed to govern the liquida-

tion of war surpluses.

Currently, all sales of government property, as well as of privately owned property, must be made within the pattern allowed by the regulations of WPB. Every effort will be made to adjust these controls and regulations so as to suit them to future changing conditions of demand on facilities, materials, and manpower. These changes in demands may be slow or they may be unexpectedly abrupt. At some point, which we may find it hard to identify with exactness, the problem of handling surpluses will have changed significantly.

Today, with our direct war de-mands on industry, agriculture, and our people, such that they can be met only by prohibiting certain nonessential activities, we are in a condition of an artificially created rough balance between supply and de-mand. Under such circumstances, there is real current use for practically all surpluses as they occur. Surplus piles should not be permitted to accumulate. Instead, all of us should be striving for a steady and uninterrupted flow of surpluses

back into permitted use.

At some future date, and we hope soon, partial or total termination of hostilities will bring about a sudden and substantial drop in the demands for war supplies. When that time comes orderly marketing, even with relaxed controls, will not maintain the flow of the surplus stream in sufficient volume to prevent the formation of stagnant pools. From there on out the problem will be one of so planning the distribution of these stockpiles both on a national and international basis that they make the greatest contribution to the economic well being of the American Nation.

#### What Is Surplus?

We do not consider property in the hands of its producer or in its regular distribution channels as surplus, since such holders normally have stocks of that property and are regularly in the business of selling it. Surplus in the eyes of the War Production Board is property no longer needed by the holder for the purpose for which it was acquired and which is not, in the regular course of the holder's business, sold in its existing form. We call sales of such property "special sales." We have endeavored to collect all War Production Board regulations governing special sales into a single document known as Priorities Regulation No. 13. We try to keep it abreast of our present fluid situation and have recently changed its structure so that it can be modified more rapidly. The latest current revision is dated May 1, 1944. While it basically is a sellers' document, it has value to a buyer since it sets forth the conditions under which special sales may be made.

#### Collecting the Facts

The WPB operation on the redistribution problem is now almost wholly decentralized to the field offices heading up in the 13 regional offices and in many areas further decentralized into district offices. In the regional offices, items in large enough quantity to warrant the sales

effort, or as we call them-significant disposable items-are placed on standard inventory forms.

The material form is made out in quadruplicate. The base copies, which make up the one file which we hope to keep clean, lies generally in the regional office for the region in which the property lies. Another copy usually is in the district office for the district in which the property lies in order that more effective local service can be rendered. A third trailing copy comes to Washington and usually is filed in the Material Division which has the base responsibility for the supply of the particular commodity.

This national inventory in Washington is recognized as lagging and inaccurate. It does, however, serve two useful purposes. One, it keeps WPB aware of the size of the pile, so that suitable modification of controls can be considered. In addition, it serves as a cross-over file to fill needs for which property is not available as surplus in the particular region. The fourth copy of the material form goes to the holder so that he may return it to us when sale

has been effected.

Each of the 13 regional offices publishes weekly a letter size, simple, almost sedate, sample listing of items which have become available for sale from surplus. It circulates under the name "Redistributor." Well over 75% of the items listed as available in the issue which appears on your desks on Monday have found buyers by Saturday of that week.

#### Some Difficulties

We recognize that there are definite obstacles in the way of ready movement of this surplus except when there are bare shelves in regular sources. One of the serious obstacles is the fact that all of this material which is surplus has already left the normal distribution channels and has, therefore, in nearly every case, lost the manufac-Continued on page 310

## OIL SITUATION IS CRITICAL

No easing of civilian supplies is in prospect for the duration

#### By J. W. CONNOLLY

Sales Manager Standard Oil Company of New Jersey

THE demand for petroleum products to wage modern warfare is so great that two-thirds of all the war supplies shipped overseas is oil. At present, over 30% of all petroleum products are going

into military operations.

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Called the war's No. 1 essential material, 100 octane aviation gasoline is required in enormous quantities. A few days ago the Petroleum Administrator for War released for the first time a figure on the amount of 100 octane being produced—about 400,000 barrels every day. And this is only the present output— for the construction program for 100 octane is not yet completed.

#### **Technical Progress**

Hundred octane is a great technical achievement. In reality it is a synthetic-no less so than synthetic rubber or plastics. Refinery gases, that once were used simply as fuel in the refineries, are used to produce the high octane blending agent needed in making 100 octane. The gases are sifted and sorted chemically in the most amazing manner, and each separate constituent is used to make some critical refinery product. The refiner's idea of these gases has changed entirely. No longer are they by-products to be disposed of; now they are one of the most important things he makes.

Petroleum has also been drawn upon as a source of some of the war's most important chemical requirements. Perhaps the most critical of these is synthetic rubber. A gas called butadiene is the principal raw material required for synthetic rubber. While butadiene can be produced from both refinery gases and from alcohol, the majority will have to come from petro-

leum.

Still another great chemical contribution of petroleum has been the supply of toluene—the base raw material for TNT, the king of war explosives. Normally, toluene is

derived from coal tar, but this source at most could meet only about one-fifth of the nation's present TNT requirements. The balance comes from petroleum.

Some war uses of petroleum are still military secrets. Only lately have we been able to talk about smoke generations, not ordinary smoke, but a remarkable protective screen of billions of fine particles that look and act like a real morning fog, all made to order when and where you want it. Oil is used too in new, far more effective incendiaries, and in special new types of flame throwers that some Japs in the Pacific know more about than you can be told.

#### Transportation Problems

But supplying the demands of war is but part of the entire story dealing with the shortages. story would be incomplete without looking also at the transportation problems involved in supplying the war and civilian demands. In the early days of the war, the United States diverted 50 tankers, normally supplying the East Coast, to meet the British needs. The transfer of these 50 tankers meant a loss of 250,000 barrels per day, or onesixth of the East's supply of oil. When the United States entered the war, wholesale sinking of U. S. tankers off our Atlantic and Gulf coasts forced the virtual abandonment of coastwise tanker transportation. A real crisis arose in the East.

The railroads brought into the East Coast service 74,000 tank cars, and by the middle of 1942 were delivering petroleum at the rate of more than 800,000 barrels per day. But still the total was only about half of normal requirements. The balance, if not available by water, would have to come by pipeline.

Today, with the substantial completion of pipeline projects to the East Coast, deliveries of oil from these sources amount to over 600,000 barrels per day, while tank cars

are bringing in nearly 700,000 barrels. Without including tanker deliveries, but counting those from other sources, the East Coast is now receiving about 1,300,000 barrels daily. There are also some deliveries by tankers.

#### The Outlook for Supply

We are all interested in knowing what the situation is likely to be with regard to the supply of fuel oils and distillates in the coming 12 months. The fuel oil situation is considerably easier on the East Coast than it was a year ago. In the interior, the stock situation is still reasonably tight, and in the West Coast area, particuarly the Pacific Northwest, the fuel oil situation is critical.

When demands in the European theatre decrease, the East Coast and interior situation should improve substantially, but the situation on the West Coast may remain tight because of the heavy

naval requirement.

Thus for the duration of the war, no important relaxation in stringency of the civilian petroleum supply can be expected. There does not seem, however, any likelihood of essential users being further restricted in the use of fuel oil.

The fuel oil user need not fear that changes in refining technique brought about by the war will affect his supply. On the contrary, the greater ability of the refiner to control his production will make it possible for him to supply increasing quantities of special fuel oil products to meet the new demands.

The United States has every reason to expect that enormous undiscovered reserves await the industry's drill, and that the temporary slump in finding these reserves, about which there has been much misdirected pessimism, has been largely the result of war priorities which have taken the industry's material, manpower and research effort.

And we must not overlook the petroleum substitutes. If petroleum supplies should really approach exhaustion in the far distant future we can, for example, turn to coal as Germany is doing today or to oil shales from which liquid products can be obtained by distillation.

# CHEMICAL TRANSMUTATION OF WOOD

THE lumber industry, which handles one of man's oldest raw materials, is receiving fresh stimulus from a new chemical process for transmuting wood. The methylolurea treatment impregnates the wood with a resin which makes some woods harder than ebony and imparts to the wood such dimensional stability that it will not shrink, swell or warp. Approximately twenty concerns are already installing equipment for carrying out the treatment.

Wood is a material of prime usefulness to man which nature has provided in great abundance and accessibility. With proper forest management and selective cutting, our supply of wood is constantly replenishable and inexhaustible. But in the United States only some 50 species are widely used for commercial purposes, whereas there are over a thousand other species which are not. If unsuitable woods could be sufficiently improved to be made useful, and woods from various kinds of trees be made interchangeable, this would be a most important contribution to economics and conservation. Fast growing trees could be endowed with the properties of the more desirable, but slower growing trees.

A number of the shortcomings of wood, as nature grows it, can now be overcome through chemical processes, including the methylolurea treatment. The urea compounds are taken up by the wood in a vacuum and process involving rela-

Science has overcome the limitations of an old and abundant raw material to develop a new product of improved physical properties and usefulness

By DR. J. F. T. BERLINER

Research Division, E. I. du Pont de Nemours & Co., Inc.

tively simple equipment. The chemical enters the wood structure as a water-soluble uncondensed material and reacts with itself and with the components of the wood to form insoluble but fusible products. Given sufficient time and heat the reaction is completed and an infusible product results.

For most items a vacuum period of 20 to 50 minutes and an impregnating period at pressures up to 100 pounds per square inch for 20 to 50 minutes result in sufficient impregnation to produce observable effects on the properties of the item treated. After impregnation the wood is dried in a kiln or oven. Air drying may also be employed. Mild steel equipment may be used, since the chemicals are no more corrosive than water.

Incorporation of dyes with the methylolurea makes it possible to give wood a "through-and-through" finish. Dents and scratches can then simply be rubbed out with sandpaper and the surface restored with wax and cloth.

The chemical formed in the wood, which is odorless and non-toxic, makes the wood more resistant to flame, fungi, rot and pest infestation. It may be employed in

varying degrees of impregnation. Through the use of heat and pressure, the wood may be compressed to form a stable dense product. Compression is carried out while the resin is still in the fusible stage.

By impregnating and compressing the surface zone only, one obtains a "case-hardening" effect which provides a hard, durable scratch resistant finish but retains the natural resilience and shockabsorbing properties of the inner structure. If polished or embossed faces are used in the presses, these finishes are reproduced on the surface of the resinified wood, thus making the usual finishing operations unnecessary.

tions unnecessary.

The treatment likewise eliminates the tendency of some woods, particularly softwoods and some soft species of hardwoods, to tear, shred, splinter and crush when cut, turned or worked. There is also less tendency for the grain to rise, even when the wood becomes wet.

When veneers are sufficiently impregnated and dried, they become self-bonding under heat and pressure, and no other adhesive is required to form plywoods. As far as is now known, the treatment does not have any adverse effect on the







gluing and finishing characteristics of the wood.

The water solution for impregnation may be obtained by reacting urea and formaldehyde in the proper proportions and under controlled conditions. However, a simpler, more economical and convenient method is to dissolve urea and dimethylolurea in water in the proper proportions. Dimethylolurea is made from urea and formaldehyde.

Cost of the chemicals is at present 8 or 9 cents per pound delivered to the customer's mill in small quantities, and the chemical cost of complete impregnation is of the order of

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three and a half to four and a half cents per board foot of lumber. "Case-hardening," in which impregnation is limited to the outer zone of the wood, would represent a chemical cost of three-tenths of a cent to two cents per board foot.

Even this low cost is balanced by a number of advantages and economies. Some of these are:

1. When veneer, which is valued on its surface area, is treated it remains close to its green dimensions instead of shrinking, representing a gain of 5 to 10% in area over untreated veneers.

2. Lighter construction or less

wood is required because of the greater strength and stiffness of the transmuted wood.

3. Low-cost, readily available woods can be treated and made competitive with higher priced and scarcer woods, which may have the added cost of transportation from far places.

4. Furniture, drawers, doors, etc., can be made to fit and operate under varying atmospheric conditions, without sticking or loosening, which results in economies in production and servicing.

5. The "built-in" finishes permit (Continued on page 308)

# HUGE POST-WAR DEMAND FOR FOODS

Civilians will consume 10% to 15% more than in prewar years — Purchasing agents make black ink possible on profit and loss statements — Their judgment on new things will set company pace after the war

By PAUL S. WILLIS
President, Grocery Manufacturers of America

HEN war came suddenly on December 7, 1941, America found that we had very serious shortages of some of the most vitally important materials needed to fight and win the war. In spite of these shortages, industry was called upon to produce unprecedented amounts.

The demand was not only for guns, and ships, and tanks, but for huge supplies of food. This was the greatest challenge ever faced by the food industry. We have met that challenge and today all of the requirements of the Army, Navy and Lend-Lease have been fully met. At the same time, the greatly expanded civilian demand is also being substantially met.

#### P. A.'s Deserve Credit

It may be news to you that the per capita civilian food consumption in 1944 is expected to be 6% greater than it was in the pre-war period 1935-1939. This is true in spite of the fact that 25% of our total food production has gone to meet war requirements.

Purchasing agents have done much to make this record possible.

It has been your job to find equipment when no equipment was available. It was your job to find containers when there just weren't enough containers to go around. It was your job to find new ingredients when the U-boats shut off our supplies of several imported commodities

I have never been a purchasing agent but I rather imagine that in normal times it's the kind of a job where you got very little credit if you did a good job and hell if you didn't.

During the past three years this has not been true. You have been in the spotlight because your function has been one of the most important in most company's operations.

When the war is over your function will continue to be of great importance—first of all because the success of any company depends largely upon its efficient, economical management. And, you are the fellows who buy the supplies at a price that makes possible the black ink on your company's profit and loss statement. In addition to this

essential role, you will be faced with many new problems because scientific laboratories all over the country have developed new materials, new containers and new types of equipment which will be put on the market as quickly as possible after the war.

In spite of the fact that we have not yet won the war I think it is not only permissible but essential that we look ahead to the peace to come. We must plan now so as to avoid the disastrous consequences which resulted from our hodge-podge approach to the peace following the first World War.

#### Post-war Planning

In several important ways we have benefitted by the experiences of the last war. For example, no long-range plans were made while the last war was still going to provide for the orderly handling of food surpluses. The farmers and industry were then urged to produce and produce. When the peace came, markets were flooded and widespread bankruptcies were the order of the day. Today, while the war

is still in progress, the Baruch-Hancock recommendations are being carried into effect and the War Food Administration is already taking control of the situation. Under the direction of Mr. Lee Marshall, the first move of WFA is to now carefully analyze all government purchases and inventories so as to prevent the existence of any excessive stocks when the war is over. There are a lot of details to be worked out but I think we all agree this is a businesslike approach to the problem.

Another way in which we are benefitting from the experiences of the last war is in the matter of employment. Outstanding men in the industry are now making concrete, specific plans for the re-employment of our men who are in the armed services. There is every reason to expect that industry will absorb a large proportion of these men and prevent widespread unemployment.

We are certainly in a better position now to build a successful and enduring peace than we were in 1918.

You are, of course, viewing the future in the light of your own business. You are interested in knowing what new problems you will have to meet. A number of changes have taken place during this war which will have an important bearing on the futue. Farm prices are at a high level today. Washington is legally committed to maintaining the prices of most important food and fibre crops through the period of after-war adjustment-not at the peak levels of today but high enough to enable the farmers to keep themselves in good financial condition.

#### Huge Purchasing Power

Wage rates are substantially higher than they were in the 1930's. And, because organized labor is so politically powerful, it seems improbable that base wage rates will be cut very much. These two factors—high farm prices and labor rates—combined with the huge accumulated purchasing power in the hands of the public, spell out an era of after-war prosperity which should be sustained for some time.

For every dollar's worth of merchandise available today people have \$2.50 to spend. When peacetime production is resumed the public demand will be for quality. They have money to spend and they will want the best.

Another war experience has been the development of many new products—improvements of old products—new packaging materials and streamlined manufacturing proc-

So far as food is concerned—when the war ends our production capacity will be at an all-time high record. Our accumulated stocks will probably not be very great because the WFA is now engaged in an intelligent program of liquidating these stocks in an orderly fashion. Our farm production will be at an all-time high. We shall probably have about 380 million acres under cultivation. We should have a record volume of food supplies—measured especially in terms of nutrients produced.

Assuming that our reconversion to peace is reasonably rapid and that industry can and does absorb an additional 9 million men-the civilian demands for food will be very great. Up to 1940 we could only theorize about the nature of the increased demand for food under conditions of full employment. In the war period we have learned much more. We know that civilians will consume between 10 and 15% more food than in pre-war years. We know this because they did it in 1942 and 1943, and if supplies had been available it is probably that they would have consumed more.

In other words, if we are able to achieve a high degree of employment when the war is over, our peacetime civilian demand for food will probably be as great as our war needs.

#### World-wide Demand for Food

In addition to this great market here at home in America, the world demand for food will be very great. In this war the acres dominated by the Axis are much greater than those conquered by Germany in the last war. The stripping of supplies has been more systematic and thorough. The sufferings are more severe.

Early in 1940 former President Hoover, speaking before the Overseas Press Club, is reported to have said: "I do not believe that as a Christian Nation—or as a nation loving liberty—we have any moral right to stand by and see people starving to death wholesale who are helpless to help themselves."

In the task of planning for liberated areas, however, we must be practical. The job must be programmed in terms of realities,—of home production, farm supplies and shipping conditions.

While neither the United States nor the United Nations can or will undertake to feed the world, we can and should send abroad what we can spare to relieve the immediate starvation conditions and we should then help the liberated nations to help themselves back to their normal food production.

From the point of view of the food industry, the appraisal of food needs and an understanding of peacetime objectives both lead to the same conclusion. We shall need all-out production through the demobilization period and into the longer peace period that is to follow.

#### Stronger Competition

Looking ahead to the return of peace, one thing is certain. Competition will be stronger than ever before. In order to maintain a position of leadership the manufacturer will have to continue to do the most efficient and effective job possible.

I am sure that industry will welcome the return of competitive selling. The present high standard of living in this country is, in large measure, the result of free, open competition with each concern doing its utmost to make its particular brand the best in the world.

Progressively higher standards of quality, flavor and nutritive value, coupled with lower prices, have been the trend in the food industry since its earliest days. This will be even more true after the war if we are freed from an excess of government control and restrictions.

#### Should Keep Useful Measures

Let us examine the principal government regulations which have been imposed upon the food industry during the war. They are: (1) the determination of food requirements and the allocation of supplies. In other words, production has, in large measure, been controlled by government in order to meet the requirements of our armed forces and lend-lease. (2) Price ceilings and rationing. (3) Government price supports as an incentive to farm production. (4) Measures requiring canners and other food manufacturers to set aside certain percentage of their supplies for government needs. (5) Measures to allocate imported supplies. (6) Subsidies.

All of these measures originated in war powers given to the President and through specific Congressional enactment. All of them should now be thoroughly and carefully studied by the food industry and by the public so that we can keep those measures which will serve a useful purpose in peacetime and quickly eliminate those which, in peacetime, would shackle the food industry and prevent our great potential future.

#### "FAIRBANKS-MORSE SCALES - ARBITERS OF BUSINESS"



# The Decision Is Final!

Since 1830—Fairbanks-Morse Scales have been rendering split-second decisions recognized as *fair* and *absolute* by buyers and sellers alike.

They are accurate, reliable, honest weighing decisions that have exerted a profound influence on the progress of industries and the welfare of nations.

The accuracy and long life built into Fairbanks-Morse Scales can give you added protection—distinct plus values wherever fast—accurate—efficient weighing is essential.

They are tangible *values* developed and pioneered by a company that places no ceiling on whatever it takes to make the finest scales possible to produce.

Fairbanks, Morse & Co., 215 Fairbanks-Morse Building, Chicago 5, Illinois.



## FAIRBANKS-MORSE

DIESEL ENGINES PUMPS MOTORS GENERATORS WATER SYSTEMS SCALES STUKERS FARM EQUIPMENT

RAIL ROAD FOUIPMENT



Scales



#### COLLET SPEED CHUCK

COLLET speed chuck said to be suited especially for turning bar stock, facing off and second operation turning, is announced by Zagar Tool Inc., 23880 Lakeland Blvd., Cleveland, Ohio.



Chuck can be used on screw machines, on lathes, and wherever collets are standard equipment. In Zagar fixtures the collet does not move at all, and face-off and length dimensions can be held within close limits. It can be opened and closed while machine is running. It is available in 1" and 2" sizes.

#### SEARCHRAY INDUSTRIAL X-RAY UNIT

SELF - contained industrial X-Ray unit which provides a quick, accurate means for non-destructive ex-

amination of specimens for internal flaws, cracks or foreign matter is announced by North American Philips Co., Inc., 100 E. 42nd St., New York, N. Y. New device is known as the Norelco Searchray 150. It is said to be inexpensive to install, and easy to operate. Descriptive matter available.

#### NEW RATCHET WRENCH



ILLUSTRATION shows ratchet wrench made by the Keller Tool Co., Grand Haven, Mich. This is said to be a powerful, durable tool designed for difficult nut-running in close quarters. The tool is available in three sizes with sockets for use on nut-running jobs ranging from ¼" to ¾", all tools having a head clearance not exceeding ½". Sockets are broached through so that merely by turning the wrench over it can be used for removing nuts as well as tightening.

#### HEAVY GAUGE STRAINER BASKETS

INCREASED straining area and rugged construction are features of new strainer baskets announced

by the Blackmer Pump Co., Grand Rapids, Mich. They are constructed from heavy gauge perforated sheet instead of the usual wire mesh and are available with various size openings. Use of the perforated sheet is said to increase the net straining area up to 10 times the pipe area.

#### RESPIRATOR FACELETS



A N/N O U N CE-MENT is made by the American Optical Co., Southbridge, Mass., that its R-1000 respirator, developed to protect workers against certain dust, fume and gas hazards, is now

being equipped with knitted cotton facelets. Facelets make the respirators more comfortable, absorb perspiration, and give the face a certain measure of protection against dust and dirt. Facelets can be ordered separately. They can be washed and used over and over again. They will fit most standard design respirators.

#### NEW SEAM WELDING CONTROL

NEW control designed exclusively for seam welding, and incorporating a completely electronic timing cir-

cuit, is announced by the Industrial Control Division of the General Electric Co., Schenectady, N. Y. Designated as Type CR7503-B110, the new resistance welding control is especially suitable for operations where frequent changes of the timing pattern are required, such as when welding a variety of materials of various shapes and thicknesses.

#### SAW LUBRICATOR



DOALL Drip applicator for cut-off machines is designed to apply cutting oil directly to the gullets of the saw. The unit consists of an 18-ounce sight feed, drip-type oiler, a bracket, wing nut,

tubular pipe and fittings. Use of applicator is said to result in longer saw life and increase the speed of metal cutting. The DoALL Co., Des Plaines, Ill.

#### SYNTHETIC RUBBER GRINDING WHEEL

GRINDING wheel for finishing molded synthetic rubber products, which cuts fast, clean and cool without pull-

ing or crowding the softest rubber compounds, is announced by Atlantic Abrasive Corp., 510 Pearl St., So. Braintree, Mass. It is known as the Atlantic B-C grinding wheel, and is available in variety of shapes and sizes.

#### VOLTAGE TESTER



VOLTAGE tester that tests without lamps, gives positive voltage identification and distinguishes between A.C. and D.C. is offered by Square D Co., 6060 Rivard St., Detroit 11, Mich. A.C.

voltage markings are 110, 220, 440 and 550. D.C. Markings are 125, 250 and 600. The device is housed in a cylindrical fibre case for easy gripping and is practically unbreakable. Sharp spear points on the ends of the leads permit piercing of wire insulation for testing without damaging it.

(Continued on page 120)



Elbaws

Saddles Laterals Straight Laterals Reducing-on-Run

Returns 180° Short Radius
Returns 180° Extra Long Radius



Standard Weight

1/2"-24" 1"-30"

1/2"-30"

1/2"-24"

1"-30"

1"-21/2"

3/4"-24"

Tees Reducing Outlet | 3/4"-24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24" | 1/24

Stub Ends Lap Joint 1"24" 1"-24"

Nipples Shaped, 90° to Header 11/4"-12" 11/4"-12"

Nipples Shaped, 45° to Header 11/4"-12" 11/4"-12"

Saddles 1"24" 1"-24"

1"24" 1"-24"

11/4"-12" 11/4"-12"

11/4"-12" 11/4"-12" 11/4"-12"



Light Gauge Nominal Iron
Pipe Size Pipe Size
4"-24" 3"-12"

4"-24" 3"-12"

4"-24"

SUPER Tube-Turn 45° long radius elbows, 90° long radius returns and 180° long radius returns and Extra Strong in sizes from 3" to 12".

Tube-Turn welding fittings and flanges conform to applicable ASA flanges conform to applicable ASA standards. For further and ASTM Standards for Tube Turns details please refer to Tube Turns catalog and data book No. 111.

3"-12"

1"- 3"

3"- 8"

1"- 8"

1"- 8"

1x3/6-12x10 1"- 8"

1"-12"

1"-12"

1"-12"

1"-12"

3/4"-12"

3/4"-24"

11/2"-30" 3/4"-30"\* 1"-24"

11/2"-30"

1"-21/2"

3/4"-24" 3/4"-24"































STRAIGHT CROSS



Saddles		11/ "-24" 174 TIONS ACTIM STORING TO TUDE TILL	1 10
5800101	Straight	11/4"-24" and ASTM States to Tube 111.	^ I
		3/ 1/3/	- 1
Laterals	Keducina	11/4"-24" 1/4"-24" and ASTM Status refer to Tube 11.  3/4"-12" 3/4"-12" details please refer to No. 111.  details please refer to Tube No. 111.  details please refer to No. 111.  catalog and data book No. 111.	. 1
Lateran	Straight	74 an 24" * are used for size thickness	
Crosses	Walding	and sleeves are to iron pipe	
Rings		34"-24" 34"-12" details please resolution book NO.  34"-12" 34"-12" details please resolution book NO.  2"-24" 34"-12" details please resolution book NO.  e-Store saddles and sleeves are used for external reinforce catalog and data book NO.  e-Store saddles and sleeves are used for external reinforce catalog and data book NO.  e-Store saddles and sleeves are used for external reinforce catalog and data book NO.	7
Sleeves	Melgina	34"-12" 34"-12" catalog and date reinforce- 2".24" * * catalog and date reinforce- 2".24" * * catalog and date reinforce- 2".24" * * catalog and date reinforce- 2".24" * catalog and date reinforce- 2".24" * catalog and date reinforce- 2".24" * used for external reinforce- 2".25" * used for externa	-
3160.	a short radius.	STEEL FLANGES 1500 Lb. 1500 Lb. 1500 Lb. 1/2"-24" 1/2"-24"	11
*30" siz	e snor-	CED STEEL 100 Lb. 900 Lb. 1/2"-24" 1/2"-24"	
-	FO	RGED STEEL 400 Lb. 400 Lb. 118 24" 1/2"-24" 1/2"-24" 1/2"-24"	
	INF_TUKIN	150 Lb. 300 Lb. 400 Lb. 1/2" -24" 1/	d.,
1	Open	150 Lb. 300 Lb. 1/2" -24"	A22
_		1/2" - 4" 1/2" - 4" 1/2" - 4" 1/2" - 1/-11-74" 10	- 4.00
	Mark		24"
Welding Neck			
	Slip-On	1/2"-24" 14 24" 1/2"-24" 1/2" 24" 1/2"-24"	1911
1	Sup	-AH 1/2 -AH 1/2 -AH 3/4"	-14
	Lap Joint	1/2 1/4"-24" 1/2 1/4"-31/2	
	Threaded		
100	Blind	11. " - 29" 12" 48" 31. " - 29" 1 " - 12" 3 " 13"	_
80. 1		14 - 24" 3/4" - L" 12" 4" - 12" 4" - 12"	
	Socket Type  Socket Type  Jucing-threaded or slip  Orifice—threaded	p-on 3/4"-24" 3/4"-24" 4"-12" 4"-12" 3"-12" 1"-12"	
		24" 3" 12" 3" 12" 11"	_
Dec	lucing-Interesded	1"-24" 4"-12" 1"-12" 1"-10"	
670.	Orifice—threaded		
	Orifice—slip-un	ck 1"-24" 1"-10" 1"-10	
1	Orming ne	1"-24" Slanges.	_
251/50	Orifice—welding ner	k for 600 ID in flanges.	
19600A 1-	Lang Welding	11/4" same as for 1500 ID.	
	Long sizes	ck   1"-24"   1"-14"   1"-15"	
3	nimensions on sizes	thru 4/2	
211	Dimensions on state		
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	and the second second		



TUBE - TURN Welding Fittings and Flanges





FIRST
SEAMLESS
WELDING FITTINGS







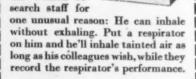




In making safety equipment, with human life at stake, Willson will neither skimp nor compromise. Here's one of many ways Willson makes sure its products are really safe:

#### THE MAN WITH THE ONE-WAY NOSE

Oscar here is on the Willson re-



The respirator shown here, #780, is only one of more than 50 styles we make to meet every known industrial need. #780, for instance, is Bureau of Mines-approved for protection against metal fumes, toxic dusts, chromic acid mist. If you have a problem in lung, head or eye protection, our 74 years' experience is at your service.

There's a Willson Safety Service Distributor in every major industrial area.

GOGGLES . RESPIRATORS . GAS MASKS . HELMET

PRODUCTS INCORPORATED
READING, PA., U. S. A. Established 1870

(Continued from page 118)

#### ELECTRIC HEAT TREATING



ELECTRIC heat treating muffle furnaces are offered by the Cooley Electric Mfg. Corp., Indianapolis, Ind., in two sizes: Type MH-3 has chamber capacity 8" wide, 6" high by 14"

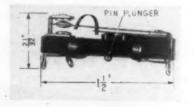
deep; outside measurements 18" x 22" x 23"; maximum consumption 3400 watts. Type MH-4 has chamber capacity 10" wide, 6" high by 18" deep; outside measurements 18" x 22" x 27"; maximum power consumption 4800 watts; operating temperatures 1750 deg. F for continuous operation and 1850 deg. F for intermittent operation. Type MH3 operates on 110-220 volt circuits. Type HM-4 is available for 230 volt circuits only.

# NEW 'FLEXIBLE INSULATING VARNISH

FLEXIBLE insulating varnish, No. R-851, designed for applications that demand great lead wire flexibility in

addition to high mechanical strength, is announced by The Sterling Varnish Co., 169 Ohio River Blvd., Maysville, Pa. It is a clear baking varnish that dries completely throughout when baked at a temperature of 135 deg. C. The dried insulation is said to be oil-proof and exceptionally water, acid, and alkali resistant. It is particularly recommended for electrical equipment wound with glass covered wire designed to operate at exceptionally high operating temperatures.

#### 1 OZ. SNAP-ACTION SWITCH



NEW midget switch built on the rolling spring principle, made to the maximum dimension of 1½"-9/16" wide, 7/16" thick, and weighing less than an ounce is announced by the Acro Electric Co., 1331 Superior Ave., Cleveland 14, Ohio. Component parts are non-corrosive. Switch is designed for actuation from either the top or the bottom. It is adapted to electronic control devices, machine tools, aircraft and electrical appliances. Under factory tests the switch has shown no failure after 94 million operations. When built into relays, smaller coils may be used as only 4 to 6 oz. operating pressure is required. It is furnished in single pole, normally open, normally closed, and double throw with both pretravel and over-travel provided.

#### NEW ESNA SPRING-LOCK FASTENER

NEW spring-lock fastener designed for "quick - acting fastener with the qualities needed for use on the cowling

of high-speed airplanes," is announced by Elastic Stop Nut Corporation, Union, New Jersey. It has been accepted for use on production of aircraft and for maintenance by the U.S. Army Forces, by the U.S. Navy Bureau of Aeronautics, and by the Civil Aeronautics Administration for the U.S. Department of Commerce. It is composed of two parts, both of them installed permanently on the fixed part as well as the removable part fo the cowling or other assembly, thus avoiding chance of loss of either part. Fastener can be furnished in any required metal. Catalog showing complete specifications, sizes, test data, etc., available.

#### PORTABLE SAND MULLOR



PORTABLE sand mullor named the Mulbaro, is announced by the Beardsley & Piper Co., 2541 No. Keeler Ave., Chicago, Ill. Unit is operable in small space, and is easily moved about ac-

cording to the manufacturer. Mulling unit is clamped to barrow; after mulling, sand is wheeled away. Number of barrows can be used to advantage for each mullor, making possible the handling of variety and mixes of sand without contamination. Bulletin gives detailed information.

#### WEIGHT RECORDERS

GRAPHIC weight records in permanent form are available with scale models equipped with Graphic recorders. Records may be referred to either during the weighing operation or at a later date.



They show weight of each material and also the time at which it passed over the scale. In weighing batches this permanent weight record tells what weights have gone into the batch and when. The recorder, clock driven and mounted on top of the scale dial housing may be either of two types. Circular recorders show the weight and time of weighing on a ten-inch disc. The second type, a strip recorder, has a strip 100 ft. long and rates of travel varying from 3/4" per hour to 12" per hour. It can be operated at high speeds than would be practical with the circular recorder. Toledo Scale Co., Telegraph Rd., Toledo, Ohio.

(Continued on page 122)

### For SAFETY'S sake . . . use CONDUIT

(Full Weight Rigid Steel)

# REAL Protection

PLANT reconversion after Victory will bring opportunity to replace unsafe emergency wiring methods and wartime substitute materials with approved time-tested systems.

You can count on using standard-threaded, full-weight rigid steel electrical conduit wherever real protection is needed -- for strength and endurance, for prevention of penetration of moisture, vapors and dust, for effective resistance to shock, vibration, corrosion, arcing and short circuiting.

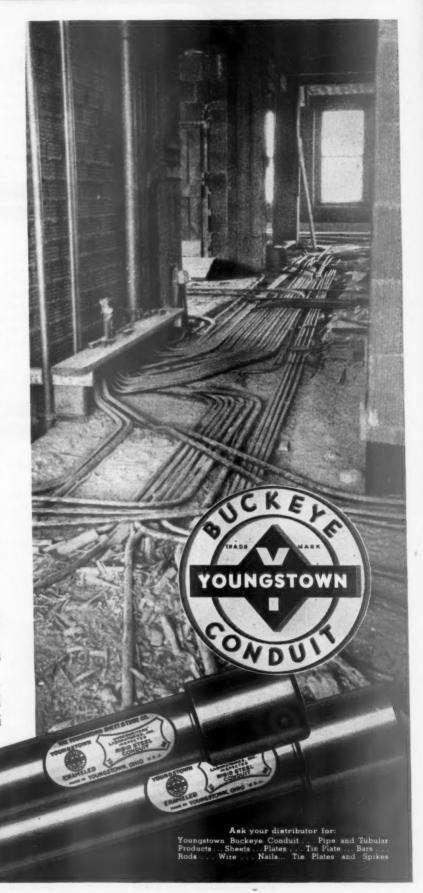
After the demands of war are satisfied, you'll be able to get all the rigid steel conduit you want. Your distributor will have Youngstown BUCKEYE CONDUIT in stock again -- in all the sizes and quantities you'll need.

#### THE YOUNGSTOWN SHEET AND TUBE COMPANY

YOUNGSTOWN 1, OHIO

Manufacturers of CARBON, ALLOY AND YOLOY STEELS

Right-This upper floor remained unfinished for several years. The rigid steel conduit afforded vital protection to wiring, against careless workmen and intruders.

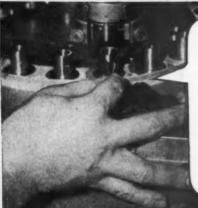


#### Elek-Tro-Cut Three-M-Ite Cloth Utility Rolls



#### CONVENIENT

When narrow strips of abrasive cloth are required for metal finishing it is economical to use Elek-Tro-Cut Three-M-ite Utility Rolls and avoid the waste and frayed edges of torn strips. Handy for work bench or tool crib. Short strips can be torn to size needed. 50 yard rolls; widths 1, 1½ and 2 inches—Grit numbers 320 to 24.



#### FOR PRECISION FINISHING

The convenience of Elek-Tro-Cut Three-M-ite Cloth Utility Rolls for precision finishing was demonstrated by a builder of airplane engines. 20 pivot pins on each gear carrier had to be polished individually to remove tool marks. Short pieces were looped around each pin and, rotated by a special chuck, polished pins perfectly; saved 50 minutes per gear carrier.



#### FAST, SMOOTH, CUTTING ACTION

Elek-Tro-Cut Three-M-ite Cloth Utility Rolls prove their value under wartime requirements. With every worker and machine under pressure for greater production, these convenient rolls of fast-cutting, long-wearing Aluminum Oxide, on a tough, flexible cloth backing are proving that high quality and high production are both possible.



(Continued from page 120)

#### NEW ELECTRONIC RELAY



relay for amplifying the very limited current transmitted by delicate control contacts or high resistance circuits, thus materially increasing the application range of many control de-

vices, is announced by the Industrial Control Division of the General Electric Co., Schenectady, N. Y. Operated by any material having a resistance of from 0 to 500,000 ohms, or even greater if necessary, the new relay is especially suitable for controlling liquid levels in tanks and boilers, sorting metallic parts by size, detecting broken threads in textile machines, and as a limited switch requiring extremely light pressure to operate. It is small and light in weight.

#### ANNOUNCE NEW SPOT WELDING ELECTRODE

A SELF-Adapting "Frostpoint" spot welding electrode for use with standard electrode holders, eliminating the

need for adaptors, is announced by Frostrode Products, 19003 John R, Detroit, Mich. Though intended for use with refrigerated coolants, the new electrode provides better cooling with ordinary water cooling than does the conventional spot welding electrode, it is claimed. Its use is said to result in an immediate reduction of electrode temperature during welding equal to the use of 60 deg. F. colder water. The new electrodes are available in 5%" and 7%" O.D. and any standard length.

#### THREAD GRINDER WITH THY-MO-TROL DRIVE



THREAD grinder electronically controlled by General Electric's Thy-motrol drive, is announced by The Dalzen Tool & Mfg. Co., 12255 E. Eight Mile Road, Detroit, Mich. The new machine is

said to provide the highest possible production of threaded parts, thread gauges, straight and spiral fluted taps and thread milling cutters. Outstanding advantages of the machine are claimed in complete control of work quality, ease of operation, and speed of uniform production. The tool is available in two models, the No. 5 universal machine handles a wide variety of work up to 934" length of thread any place on a 20" shaft. The No. 6 production model without back off feature handles work up to a full 20" length of thread on a 20" shaft. Literature available.

(Continued on page 126)

# WHAT YOU WANT or Piping WHERE YOU WANT

You can get materials for any piping requirement from Grinnell warehouses in the cities listed here. Included are practically every type of materials for simple or complex piping installations. At these Grinnell branches, experienced engineers will assist you to solve any unusual piping problem.

Grinnell piping products are available from your local Grinnell jobber. Send for catalogs and remember Grinnell "whenever Piping is involved".

> GRINNELL COMPANY, INC. Executive Offices: Providence 1, R. I.

#### **Branches and Warehouses**

Atlanta 2, Ga. Charlotte 1, N.C. Chicago 9, Ill. Cleveland 14, O. Houston 1. Tex.

Los Angeles 13, Cal. Minneapolis 15, Minn. New York 17, N. Y. Oakland 7, Cal. Philadelphia 34, Pa.

Providence 1, R. I. St. Louis 10, Mo. St. Paul, Minn. San Francisco 7, Cal. Seattle 1, Wash.







Welding Fittings

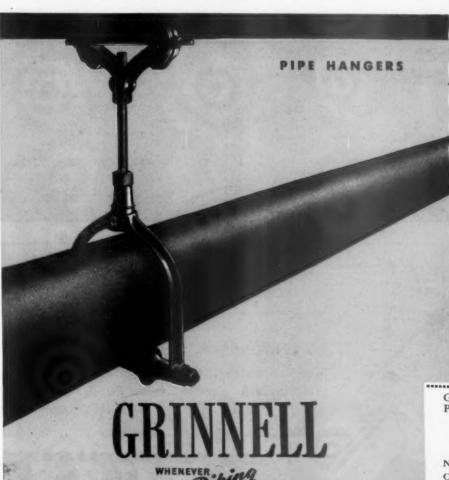


Pre-Engineered Spring Hanger



Grinnell-Saunders Diaphragm Valve

Pipe - Valves -Specialties for Heating, Water Works, Fire Protection and Pulp and Paper Mills.



#### GRINNELL COMPANY, INC.

Providence 1, R. I.

Please send copy of Catalog describing ..., Welding Fittings Pipe Fittings Pipe Hangers .... Spring Hangers Grinnell-Saunders Valves

Name	Title
Company	***************************************
Address	***************************************

# DEVEN JEARS



WHY BUSS FUSES DON'T BLOW NEEDLESSLY



10 FEATURES in the design of the **FUSE-CASE** help make it possible.



The SUPER-LAG development in the FUSE-LINK completes the job.

USS

# only one blown fuse on our Trimmer after we installed BUSS Super-Lag"

Says MR. FRANK MILLER, CHIEF ELECTRICIAN

STRATHMORE PAPER COMPANY

WEST SPRINGFIELD AND WORONOCO, MASSACHUSETTS

HERE ARE THE FACTS—"In June, 1937, we installed a paper trimming machine which is powered by a  $7\frac{1}{2}$  horsepower, 440 volt, 3 phase motor. Almost immediately, we had trouble with fuses blowing when we started the machine.

"Then we installed BUSS Super-Lag fuses—and in seven years we have had only one blow to date. That proved to me the value of time-lag in fuses. Since then we have gone 100% to BUSS fuses in our 2 plants each at West Springfield and at Woronoco—and our fuse blows have been reduced by at least 30%."

In the Strathmore Paper Company plants, Buss Super-Lag fuses have again proven their ability to withstand harmless surges when motors are started under heavy load without over-fusing the circuit. With these fuses, you can eliminate many needless shutdowns—yet have adequate protection.

Buss fuses require no maintenance or periodic inspection. They don't open needlessly. If one opens, you can be sure some condition needs correction. When one opens, it requires less than 45 seconds to renew with an inexpensive link.

#### Here is Why BUSS Fuses Greatly Reduce or Entirely Prevent Needless Blows

The fuse case is designed to insure good contact on the link, even when the fuse is renewed by an inexperienced person—and it is so designed that vibration or heavy overloads or the constant heating and cooling of the fuse will not permit poor contact to develop. Thus excessive heating, which causes fuses to blow needlessly, is prevented.

The fuse link used is the famous "BUSS Super-Lag." It has lag-plates attached to it. These give a long time-lag so that unusually heavy starting current or other harmless overloads will seldom cause the to blow.

#### How to solve the "shutdown" problem

Pass the word along that all purchase records dealing with circuit protective devices should be immediately changed to call for BUSS Super-Lag Renewable fuses. Then, as fuses are replaced or new installations made, your plant will automatically get the benefit of the carefree, trouble-proof protection that BUSS Super-Lag fuses afford.

BUSSMANN MFG. CO. • University at Jefferson, St. Louis 7, Mo. Division McGraw Electric Company

# SUPER-LAG FUSES

SOLD THROUGH WHOLESALERS

Tu

#### ANNOUNCE PLATING RACK INSULATION

WRAP-RAX is the name of a tape for insulating plating racks and for use as a stop-off, announced by Han-

son-Van Winkle-Munning Co., Matawan. N. J. It is a synthetic thermoplastic resin in tape form which has high resistance to abrasion and wear and excellent dielectric properties. It resists chemically all cleaning, pickling and plating solutions commonly used, and will not contaminate solutions. Manufacturer states it can be used for repairing and patching old racks. Bulletin WR-102 describes it

(Continued from page 122)

#### ONE-PIECE HOSE CLAMP



ONE-piece hose clamp using no gears, thumb screws or intricate locking means is announced by Tinnerman Products, Inc., 2050 Fulton Road, Cleveland 13, Ohio. May be snapped over the hose into pre-latched position by hand as shown in left illustration above. Final lock is made with hand pressure on ordinary pliers as shown at right. Made for low pressure connections the clamp has a lower profile, is lighter in weight and exerts an even pressure around the entire circumference of the hose. It is made of S.A.E. 1060 spring steel with parkerize and zinc chromate primer finish. Available for all sizes of AN and Ordnance specification hose in a wide range from 1/2" O.D. and up.

#### DURALON NEW ORGANIC RESIN

DURALON is the name of a new basic resin announced by the U. S. Stoneware Co., Akron, Ohio.

It is said to be characterized by the lowest water absorption of any organic resin, insolubility (after activation) in any solvent or combination of solvents, high electrical resistivity, absolute stability in storage and handling, and by ease of workability. In its pure form it is a heavy, viscous liquid, dark maroon in color. On incorporation of catalysts and application of mild heat, Duralon reverts to an extremely hard, dense, black substance. Varying physical, chemical and electrical properties can be developed in the base resin by incorporation of the usual fillers and lubricants. Its paramount immedi-

(Continued on page 128)

## ONLY THE BEST



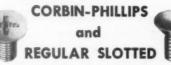
#### GET THROUGH -

Take a handful of Corbin Screws any type. You'll see clean, saw-cut slots or true-shaped Phillips recesses ... well-formed heads, correctly centered over strong, straight shanks ... deep, keen threads with sharp points.

And you'll see what we mean by uniform accuracy ... which allows only the best to get through Corbin - to you.

#### LOOK TO CORBIN

for your requirements in Screws and Nuts ... a full range in both



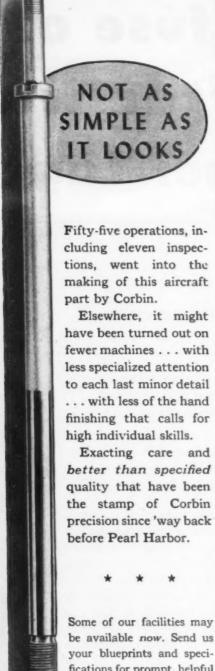
Also AIRCRAFT Screws and Nuts to Governmental specifications.

#### See your Distributor

- also complete stocks at Chicago, New York and New Britain . . . and sales representatives who can "talk shop." Write for Catalog.

THE CORBIN SCREW CORPORATION The American Hardware Corporation





Some of our facilities may be available now. Send us your blueprints and specifications for prompt, helpful study of your precision requirements.

NOT AS

Elsewhere, it might

Exacting care and

THE CORBIN SCREW CORPORATION



# ERSION TIME...

- ... there will be many new materials, methods and machines for packaging and converting,
- ... pre-war standards of production speed, product protection and package distinction will go into the discard,
- ... new and improved stocks, coatings and containers will evolve from wartime developments,
- ... and adhesives of yesteryear will likely fall short of your needs.

Then, just as now, National will have the answers to your packaging and converting problems.

#### PLANNING FOR POST-WAR?

Do not overlook adhesives . . . so important as to tie up your entire plant . . . yet so trivial as to frequently escape listing as a production cost. Discuss your plans now with our adhesive engineers.

0

"RESYN" ADHESIVES What are they? Where can you use what are they: where can you ase them? Why are they so popular? How do you handle them? These, and many other questions relating to your current and postwar packaging adhesive problems, are answered in this

FREE - SEND FOR YOUR COPY TODAY! NOTE: Resyn Adhesive

#172 complies with the
new Army-Navy Sealing Spec. JAN-A-101\* covering overseas shipments in fiber containers. (\*Copy on request.)

DIVISION OF NATIONAL STARCH PRODUCTS INC

MAIN OFFICE: 270 MADISON AVENUE, NEW YORK 16 . Chicago . Philadelphia . Boston . San Francisco . and All Principal Cities



Chicago Metal Hose Corporation's "Rex-Tube" is used on many types of original equipment. In addition, this standard flexible metal hose is used for maintenance requirements throughout industry in general, frequently replacing more cumbersome and troublesome piping hook-ups.

The application always determines the type of flexible metal hose that should be used. Chicago Metal Hose Corporation manufactures the most diversified line of flexible metal hose products. Therefore, C.M.H. engineering recommendations are complete and unbiased.

The complete line of Chicago Metal Hose Corporation fittings makes installations easier and faster. If you are concerned with the replacement of flexible metal hose, write for complete information.

Flexible Metal Hose for Every Industrial Use

# CHICAGO HOSE CORPORATION MAYWOOD, ILLINOIS Plants: Maywood and Elgin, III.

(Continued from page 126)

ate importance is an impregnant, as a laminating and bonding agent, or as a protective coating material. Duralon solutions may be applied as coatings by any of the conventional processes. Coatings show practically zero water absorption. Products made from Duralon resins not only show a permanence of properties at normal temperatures but "apparently retain a preponderance of their desirable properties at temperatures in excess of 400 deg. F."

#### MULTIPLE POTENTIOMETER



NEW multiple control an-18 nounced hv the American Pattern & Mfg. Co., Fisher Bldg., Detroit. In new unit, operable either as a rheostat or as a mulpotentiotiple meter. number

of contactors roll upon a single resistance coil. Photo shows a unit having six contactors, though it can be made with any desired number. The new device fits into and occupies the space heretofore required for a single unit of conventional design with very little increase in weight.

SAFETY HAT and EYE-MASK FOR WOMEN NEW MODEL hair guard in the form of hat which resembles the French Foreign Legion head gear and

which covers all the hair, and ventilated one-piece all plastic eyemask, are announced by the Standard Safety Equipment Co., 232 W. Ontario St., Chicago, Ill. Eyemasks are available from stock on AA rating. Hats are cleanable, adjustable, light in weight, sool and safe. No rating required.

#### NEW CUTTER DESIGN



A NEW idea in cutter design which has made possible the thread milling of straight sided threads in less time and to a higher degree of quality than possible with other production methods is announced by the Detroit Tap & Tool Co., 8432 Butler Ave., Detroit 11, Mich. The tool is a special taper type thread milling cutter which enables the production of straight sided threads at production speeds.

(Continued on page 130)



Hear the General Electric radio programs: "The G-E All Girl Orchestra" Sunday 10 P.M. EWT, NBC. "The World Today" news every weekday 6:45 P.M. EWT, CBS.

FIFTY YEARS IN THE PLASTICS INDUSTRY

GENERAL & ELECTRIC

# There is No Substitute

FOR THE DEPENDABILITY OF

# HUSSEY



## in Post War Planning

- \* UNIFORMITY
- \* WORKABILITY
- \* CORROSION RESISTANCE
- \* RUST-FREE FOREVER
- \* NEW, WAR-PROVED ALLOYS

7he

PATRIOTIC

AMERICAN

WAY—

DO THE BASIC

PLANNING

now!

Hussey engineers with their background of research, their metallurgical, creative resources and new wartime "KNOW-HOW", are working with leading manu-

facturers in virtually every industry—helping to plan the thousandand-one post war uses for copper and its alloys . . . to better provide the promised jobs to our fighting men after Victory.

Planning for the future yes, without a moment's let-up in production effort because America still needs all the copper we can produce—for speedy Victory.

Hussey engineers are ready to aid you—in Basic Planning NOW!

C. G. HUSSEY & COMPANY
Division of Capper Range Co.

Rolling Mills and General Offices: PITTSBURGH, PA.

Warehouses in Principal Cities

(Continued from page 128)

#### CUSHIONED TYPE



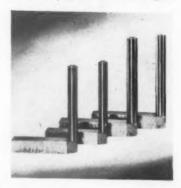
CUSHIONED type for marking smooth or irregular, rough surfaces with large numerals to designate sizes, codes or any other information, and for marking on steel, plastics, corrugated containers, etc., are announced by Adolph Gottscho, Inc., 190 Duane St., New York, N. Y. Sizes range from 2 characters to the inch to 1½ characters to 2" type faces in alphabet or figure sets, and are also available in complete word logotypes and standard 2A and 5A fonts. Literature available.

#### HORIZONTAL INJECTION MOLDING MACHINES

NEW line of horizontal injection molding machines is announced by the Watson - Stillman

Co., Roselle, N. J. Heating cylinder is of new design, developed to give higher plasticizing capacity at lower temperatures and a reduction of pressure loss within the cylinder. Change of material in cylinder is accomplished without dismantling the unit from the machine. Unit is said to meet requirements of many thermo-plastic and thermo-setting materials. Bulletin 621A describes machines in detail.

#### INDUSTRIAL TRI-SQUARE



LINE accuracy, greater checking range and constant accuracy to within tenths of a thousandth of an inch are claimed for a new industrial tri-square announced by the Thomas Tool & Machine Co., Pontiac, Mich. Materials used in the construction of the tri-square are aged, treated and tested to 60-64 Rockwell C hardness. The square is available in 4", 6", 8", 10", 12", 14" and 16" sizes.

(Continued on page 132)



### FREE BOOK HELPS KEEP EXTINGUISHERS READY FOR ACTION

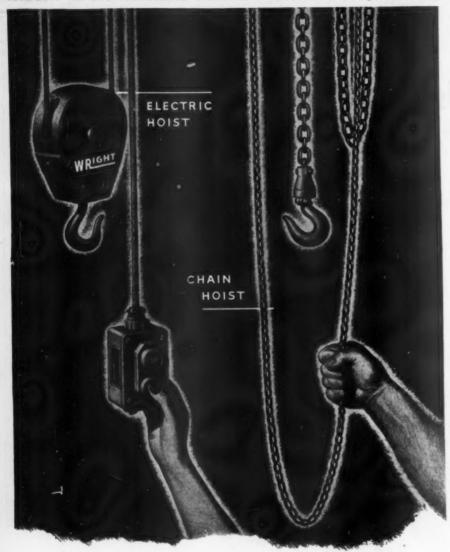
You'll be prepared to nip fires quickly at your plant only if your extinguishers are ready. And that calls for periodic examination.

To make it easy for you to set up a maintenance system, Walter Kidde & Company has issued a booklet—"INSPECTION AND MAINTENANCE OF FIRST AID FIRE EXTINGUISHERS." It covers every type of equipment, tells where to locate them, how to mark them for quick identification, what to check, how and when to recharge. It suggests forms for keeping records. Write for your free copy today!



WALTER KIDDE & COMPANY, INC., 140 CEDAR STREET, NEW YORK 6, N.Y.

#### WRIGHT MANUFACTURING DIVISION ANSWERS A QUESTION:



#### WHY TWO KINDS OF HOISTS?

On battle fronts, as on the production fronts, Wright Hoists—products of American Chain & Cable Company—do many vital jobs of lifting and moving materials. One kind of Wright Hoist, the chain type, is easily operated by hand. The other kind, the electric, is easily controlled by a push button. Both kinds of hoists are engineered to meet particular service conditions efficiently and safely.

The introduction of women in men's jobs has made it necessary to reduce manual lifting and handling to as near a minimum as possible.

Wartime demand for speedy production has also been responsible for increasing the popularity of the electric hoist.

On many jobs hand-operated chain hoists are more practical as well as more economical. They serve important uses in industry and at the scenes of battle action.

Wright Hoists and Cranes, like all Acco products, are essential in peace, vital in war.

In Business for Your Safety

#### AMERICAN CHAIN & CABLE COMPANY, INC.

BRIDGEPORT, CONNECTICUT • In Canada—Dominion Chain Company, Ltd.

In England—The Parsons Chain Company, Ltd., and British Wire Products, Ltd. • Aircraft Controls,
American Chain, American Cable Wire Rope, Campbell Cutting Machines, Ford Chain Blocks,
Hazard Wire Rope, Manley Garage Equipment, Maryland Bolts and Nuts, Owen Springs, Page Fence
and Wire, Reading Castings, Reading-Pratt & Cady Valves, Wright Hoists and Cranes.

(Continued from page 130)

#### TENSILE TESTER



SMALL in size "yet a giant in performance", Dillon portable tensile tester made by W. C. Dillon & Co., Inc., 5110 West Harrison St., Chicago, Ill., is claimed to bring precision testing within reach of every concern, and to make it possible for every company to own the finest in testing equipment. Actual overall height is 37 inches. The tester may be operated by novice or expert with the same reliable results. Extra tall models are available for testing long specimens. Compression cage and transverse testing fixture are both available. Tester is equipped with Dillon Dyanometer gauge.

#### COATED ALUMINUM BRONZE ELECTRODE

COATED aluminum bronze electrode, No. 200, is announced by the Wilson Welder & Metals Co. It is

a shielded arc electrode and can also be used as a filler rod in carbon arc welding. Manufacturer states it can be used for welding dissimilar metals such as cast iron to brass, steel to malleable iron, or the joining of any two metals which are weldable with aluminumbronze. Sizes from ½" to 3/16" in 14" lengths and ¼" in 18" lengths are standard stock items. Sizes 5/16" to ½" in 18" lengths are available on special order.

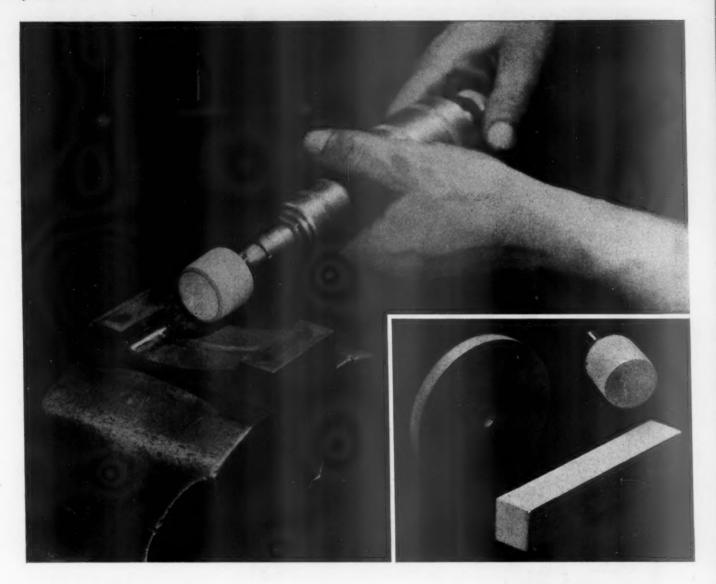
#### WATER COOLERS



OASIS line of water coolers announced by the Ebco Manufacturing Co., Columbus, Ohio, include pressure bubbler model, and cafeteria glass filler model designed for cafeterias, restaurants

and mess halls. Latter is illustrated. Its cabinet size is 42" high, width 28", depth 24". It will supply more than 40 gallons of 50 deg. F. drinking water over a 2 hour period when operating in a 100 deg. F. ambient room temperature. Capacity of Bubbler model is over 10 gallons per hour at drinking water temperature of 50 deg. Descriptive matter available.

(Continued on page 134)



## Now a complete line "MX" WHEELS, MOUNTED WHEELS AND STICKS

On a great many jobs which call for finishing and polishing there are always many out-of-the-way-places—grooves, curves, angles and flat surfaces not readily accessible. To reach such places the "MX" Mounted Wheels, used on portable type machines, are proving to be the solution of this sometimes vexing problem.

"MX" Mounted Wheels have the same finishing and polishing action and the same characteristics as the straight "MX" Wheels. "MX" Wheels, both straight and mounted, are being used on such typical jobs as polishing out tool marks and scratches, cleaning out the channels of connecting rods, polishing and finishing the

hard-to-get-at parts. For burring and polishing any complicated metal shapes, parts and castings. For finishing flutes between the cutting edges of broachers and reamers. For breaking down corners on miscellaneous parts.

NOTE: "MX" Mounted Wheels are made only in the straight shapes but they can be readily shaped or formed by the user to meet his finishing or polishing conditions. It is a simple matter to point, groove or round the wheels using a fine grit Carborundum Brand Silicon Carbide Stick as a dressing tool.

"MX" Sticks are particularly useful for breaking down edges and finishing work that can be turned in a lathe. They are also used with success for hand finishing molds and other such small, irregular surfaces.

"MX" Tools can save you time and improve the finish of your product. Send for "MX" Booklet which shows typical, successful, time-saving applications.

The Carborundum Company, Niagara Falls, N. Y.







Sales Offices and Warehouses in New York, Chicago, Philadelphia, Detroit, Cleveland, Boston, Pittsburgh, Cincinnati, Grand Rapids
(Carborundum and "MX" are registered trade marks of and indicate manufacture by The Carborundum Company)

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(Continued from page 132)

#### HEATING SMALL STRUCTURES



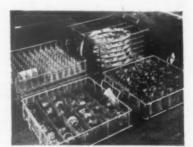
SMALL model direct fired heater, with capacities ranging from 300,000 to 850,-000 Btu per hour has been developed by Dravo Corp., Heater Dep't., 300 Penn Ave., Pittsburgh, Pa. Floor space requirements are  $5\frac{1}{4}$  x 3'. Also, heater can be suspended from wall. Model can be equipped to burn either gas or oil. Heater is thermostatically controlled. Unit is an excellent complement to present heating systems to provide warm air to remote parts. Illustration shows how heater is being utilized at outlying army bases.

#### **DESTROYS** AIR-BORNE PATHOGENIC BACTERIA

THE Hygeaire System, a com-bination of the G. E. germicidal tube and a patented reflector in a fix-

ture designed to project a zone of protection across an area about eve level, is announced by the American Sterilizer Co., Erie, Pa. Air-borne bacteria and viruses are carried into the zone of ultra-violet rays and destroyed, giving the protected space the germicidal effect of 100 air changes per hour. Graybar Electric Co. and General Electric Supply Corporation are distributors.

#### DEGREASING BASKET PADS



DURABLE, solvent-proof, rubber-like pad to line degreasing baskets and provide castings and machined parts with a protective cushion while in the degreaser, is announced by Resistoflex Corp., Belleville, N. J. Made of compar, a vinyl resin derivative, the pads not only provide a cushioning effect but also are inert to the action of degreasing solvents, sulphur base cutting oils, aromatic and aliphatic hydrocarbons, etc. They do not injure highly polished metal surfaces. Smaller wire degreasing baskets, illustrated may be coated with a solution of the same resin by a simple dipping process.

(Continued on page 136)



Write for Bulletin 316.

SCAIFE COMPANY

FOUNDED 1802

General Offices and Works: OAKMONT (Pgh. District), PAs

No gas phase

Water soluble

Representatives in Principal Cities



# GLOBE STEEL TUBES · · Basic Material in the Construction of All Types of Military Equipment

Airplanes, ships, tanks, trucks, jeeps, water stills, bailout oxygen bottles for aviators, torpedoes, bombs and other types of ammunition, rolling kitchens — nearly every kind of front line and back-of-the-lines equipment requires steel tubing as an essential component.

The physical "specs" for these tubes vary all the way from high strength for support and pressure applications to high resistance to corrosion from food acids or exhaust gases.

Globe Seamless Pressure and Mechanical Tubing, Globe Stainless Steel Tubing (Seamless and Gloweld) and Globeiron Seamless Tubing have helped solve most problems in steel tubing encountered by the builders of equipment for our armed forces.

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Globe engineers and Globe production facilities have rendered service to many manufacturers in carrying on wartime activities. Globe's completely equipped chemical and physical laboratory is constantly available for any tests desired by users of steel tubes.

GLOBE STEEL TUBES CO., Milwaukee 4, Wisconsin



- \* BOILER TUBES
- \* GLOBEIRON TUBING
- \* GLOWELD TUBES



CONDENSER AND
HEAT EXCHANGER
TUBES

\* MECHANICAL TUBING

HOW AMERICAN ENTERPRISE PRODUCES MORE, FASTER, BETTER - WITH BOWSER EXACT LIQUID CONTROL

# Up where sawmills have to be flown in... Bowser Engineered Fueling Systems



Installing airports and fueling systems on the route to Alaska operated by Northwest Airlines for the Army Air Forces, was a mighty tough job. The route was largely through such primitive country that ground transportation methods were useless. For instance, a 24-bed hospital was flown in. So was a sawmill. That gives you an idea of the problems.

Bowser Aviation Fueling Systems were chosen for three major reasons . . .

1. In airport operations in many countries, working under all extremes of conditions, Bowser Systems have proved superior in the delivery of clean, dry, safe fuel.

Bowser designs and builds systems to meet virtually every kind of special requirement, however unusual.

3. Bowser-built equipment has established records for dependability and efficiency in hundreds of industries over scores of years.

Airport fueling systems are a specialized field, of course. But Bowser specializes in every phase of exact liquid control. Bowser Meters, Proportioners, Filters, Lubrication Systems, Pumps, Stills, etc., have indispensable applications in almost every factory.

Here's a typical example: A plant in upper New York State installed a Bowser Pressure Filter for cutting oil. First job was reclaiming oil that had been in use five years and was terribly dirty. Two processings restored it to original color.

Cutter life between grinds was increased approximately 100%. Note this, too—Dermatitis cases (skin infection, due to contact with oil) dropped appreciably immediately after the filter went to work. Those points add up to a major economy. BOWSER, INC., Fort Wayne 5, Ind.

(Continued from page 134)

#### EYE SHIELD



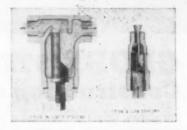
ATTRACTIVE eye-shield called Secureye announced by Pulmosan Safety Equipment Co. is said to be safe and efficient. It provides all-angle protection, eliminates overhead glare through the use of a frosted opaque visor in red, blue, gold, green or white, and manufacturer states it will not fog. Weight is but 1½ ounces, and is constructed for comfortable wear over prescription glasses. Range of vision is 180 deg.

#### NEW LEAD PLATING SOLUTION

SEVERAL lead solutions have been developed by the Hanson-Van Winkle Munning Co., Matawan, N.

J. These are the Concentrated Protecto Lead Solution, Super Protecto Lead Concentrate for general purpose plating, and B-H Lead Solution. The latter is not concentrated but is used for lead plating as prepared. It is designed especially for lead plating bearing surfaces, and is said to be excellent for general purpose plating. These solutions are for the protection of iron and steel against corrosion and to obtain a corrosion resisting coating on non-ferrous metals.

#### SPRAYING SYSTEM STRAINERS



IMPROVED liquid strainers have been developed by Spraying Systems, 4024 W. Lake St., Chicago 24, Ill. New TW strainer permits freer flow of the liquid and does not require cleaning as often as ordinary strainers; blowout plug makes it easy to flush and clean without removal from the line. This type is supplied with cast iron body and brass wire screen, with choice of screen mesh. The Type Q strainer is for single nozzle installation. Maximum capacity is one gallon per minute of water, brine, oil and liquids of similar viscosity; strainer is removable to facilitate cleaning.

(Continued on page 138)



Not only has Bawser's war production earned the Army-Navy E... Bawser equipment has helped earn if for scores of other companies.



The Name That Means EXACT CONTROL of Liquids

24 W

en ug out is uss sh. zle oil ner

# Designed to STAND WEAR -

#### RIGHT WHERE THE WEAR COMES

Notice the toe and heel of your socks. Now, notice the construction of Titeflex metal tubing. Both are re-inforced—and for exactly the same reason: to withstand long, hard wear, right where the greatest wear comes.

At the top of each convolution, Titeflex provides not one, but four thicknesses of metal. But that's not all—Titeflex is completely metal—not affected by gas, oil or liquids—not damaged by high temperatures. It's fully flexible—stands excessive amounts of vibration. Titeflex is inherently tight even under high pressure to guard against leakage. This flexible tubing is built to last. Even the

outer braid is woven *onto* the tubing (not slipped on after it is made) to provide greater durability, greater strength.

Titeflex metal tubing can play an important role in your present or post war production. In your planning, you are invited to make full use of the Titeflex research laboratories and engineering service. You are also invited to send for the new 36 page catalog, giving complete data and information on Titeflex and Titeflex fittings.

TITEFLEX, INC. 533 Frelinghuysen Avenue, Newark 5, New Jersey





JUI

Better Fasteners for you-Today and Tomorrow



because of

# **OLIVER'S**

Modern Equipment



Heat-treating, zinc plating, galvan-izing and other "special" process-ing required in the manufacture of industrial fasteners are everyday operations at Oliver, where furnaces, machinery and other equipment of the most modern types produce uniform, high quality work. Furthermore, Oliver engi-

neers know when and where to recommend the use of alloys, special processing or special designs to get the results you want.

Fasteners are extremely important-and properly specified and made, they serve dependably and economically. Let Oliver help you solve your fasteners problems.



SOUTH TENTH AND MURIEL STREETS, . PITTSBURGH 3, PA.

(Continued from page 136)

#### WELDING SMALL TOOLS



NEW DoAll Butt Welder is announced by Continental Machines Inc., 1301 Washington Ave. So., Minneapolis, Minn., which extends the application of the band saw butt welder to that of making extensions to small tools, salvaging broken tools, and for small miscellaneous welding operations. Besides welding small tools-drills, screw drivers, taps, reamers, cutting tools etc., the welder joins all types of band saws in widths up to 11/4". New machine is completely automatic, and is easily operated by unskilled help with a minimum of instructions. It is available in two modelstable model for portability, and a pedestal type with storage space for coiled band saw or other stock. Printed matter available.

#### WRENCH **PROTECTS** FINE **FINISHES**

RIGID wrench, designed the better for handling and protection of polished nickel and chrome

pipe and tubing, is announced by the Ridge Tool Co., Elyria, Ohio. It is made with strong I-beam handle and solid head, all in one piece, with a handy-hangup hole in the end. It is easy to attach and use, and is said to be positive in grip. Special webbing strap of great strength is quickly removed for replacement by pushing out pin held by spring clips. The wrench is made in two sizes: No. 2, capacity ½" to 2", 17" strap; No. 5, 1" to 5", 30" strap.

#### POCKET CONTAINERS



CLEAR crystal pocket container holding eight salt tablets is announced by the U.S. Safety Service Co., Kansas, Mo. Container is said to be noninflammable, moisture proof and heat

resistant, keeping the tablets in perfect condition. Tablets are named "Pep-Up" salt tablets. They are coated to guard against salt-sickness and heat fatigue. Tablets for refilling containers are available in bulk lots.

(Continued on page 140)

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WOULD MAKING IT PORTABLE
MAKE IT BETTER?

Much equipment is now being made portable with casters—for the greater utility and added sales appeal provided by casters' flexibility and ease of handling. Here are facts about casters that you will find helpful.

Putting assembly lines, fixtures, test stands, parts racks, tool stands, bookkeeping stands, skids, conveying units—a broad variety of equipment—on casters has saved untold hours in the war effort. Now more and more designers are thinking about portability in connection with their new products.

Bassick developments in casters and locks for portable equipment have greatly enlarged the opportunities to give products caster mobility. If making your product portable would make it better—easier to use, easier to sell—get in touch with Bassick, world's largest manufacturer of casters.

#### **BASSICK DATA on Caster Mountings**



#### ANGLE IRON LEGS

Many sizes and types of angle brackets for attaching casters. Also angle stems furnished as part of casters.



#### PIPE FRAMES

Threaded male or female pipe sockets in all sizes of casters for easy application to pipe legs.



#### METAL TUBING

Complete range of sizes in steel and iron adapters for all sizes of metal tubing from light to heavy duty.



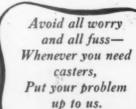
#### METAL BASES

Casters with friction ring stems or threaded stems can be applied directly to many types of metal bases without using separate sockets or adapters.



#### WOOD FRAMES

All sizes and kinds of sockets for wood legs...also conventional flat top plate casters. When designing the base or legs of new equipment, look for the best and most economical means of attaching casters. Let Bassick engineers help you with your problem. Write us.





Bassick
MAKING MORE KINDS OF CASTERS
... MAKING CASTERS DO MORE

#### THE BASSICK COMPANY

BRIDGEPORT 2, CONNECTICUT

Division of Stewart-Warner Corporation, Chicago, III.

Canadian Factory: Stewart-Warner-Alemite Corporation of Canada, Ltd.

Belleville, Ont.

#### (Continued from page 138)

# Under Corrosive Processes Amsco Alloy Stands Up...

Resistance to corrosion is imperative for many equipment parts if frequent replacements and high maintenance costs are to be avoided. Through use of the proper grade of Amsco Alloy we have been able to furnish "chemical process" plants with castings which have stood up under corrosive conditions for far longer periods than the parts which they replaced.

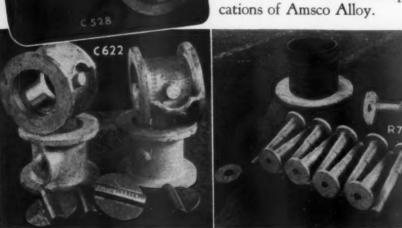
Picture C 528 shows pistons of Amsco Alloy F-8, for resisting corrosion in the hot oil pumps of an Illinois refinery. This alloy, which contains 20-22% chromium and 8-10% nickel, is primarily employed to withstand erosion, pitting, etc., from the corrosive action of acids, acid solutions and gases; and is also serviceable under temperatures up to 1600° F.

Picture C-622 shows some valves and valve bodies employed by an aluminum producer in handling corrosive liquids. These castings are of Amsco Alloy F-10, containing 26-28% chromium and 10-12% nickel, which is also an excellent corrosion resistant metal in many uses and is. additionally, more efficient under high temperatures than F-8.

Picture R-708 shows several of a number of Amsco Alloy parts for the wood pulp digester at a sulphite paper mill. An excess of free sulphur dioxide in the solution makes it essential that the metallic fittings of the digester be made of a corrosion resistant material, like the Amsco Allov F-10N formula, which contains approximately 29% chromium and 9% nickel.

If you have a corrosion problem, with or without the incidence of high temperatures, where castings can be used, it will prove profitable to consult Amsco

Bulletin 108 describes all applications of Amsco Alloy.



Advantages of Amsco-Nagle Centrifugal Pumps described in Bulletin 940.



#### 21-POUND FURNACE



TWENTY - one pound. furnace, having enough heat capacity for a 20 room house and of a type now being put in use in military aircraft, is announced by Heater Division of the Stew-

art-Warner Corp. Illustration shows South Wind heater Model 911. It is art-Warner Corp. said to be capable of producing 200,000 BTU's per hour. Its weight is 20 lbs. Size, 10" in diameter, 15" long. Principles developed, it is believed are applicable to the burning of fuel oil, with some modifications, or quite easily to the burning of manufactured or natural gas, and with some greater difficulty to the burning of coal.

#### NEW LOW TEMPERATURE **METALLIC** FLUX

MOGUL flux to overcome disadvantages characteristic of many soft soldering compounds, has been

developed by research engineers of the Metallizing Company of America, 1330 W. Congress St., Chicago. It is said to have lower melting temperature than soft silver solder on initial heats and once activated will work on temperatures slightly higher than 60/40 solder, cutting warpage, and material hardness changes and stresses. Low surface tension permits the tinning of close tolerances such as thread fits, etc., no bubbling out. Tensile pulls of 2500 p.s.i. have been made without the metal deposit separating from the surface on both ferrous and non-ferrous metals readily used as a brazing agent.

#### INDICATING LIGHT



NEW indicating light unit, with a bayonet-locked lens-cap, is announced by the Graybar Electric Co., Inc., distributors of products of the H. R. Kirkland Co. The new unit is known as the Kirkland T3-BLC. It is for use with a T3-34 type single contact bayonet lamp bulb and embodies a new design of lamp socket, free from press-fit methods of assembly and providing a direct electrical connection from the shell and the center contact pin to the terminal spades. Unit is desirable for use on applications where excessive shock and vibration are to be contended with.

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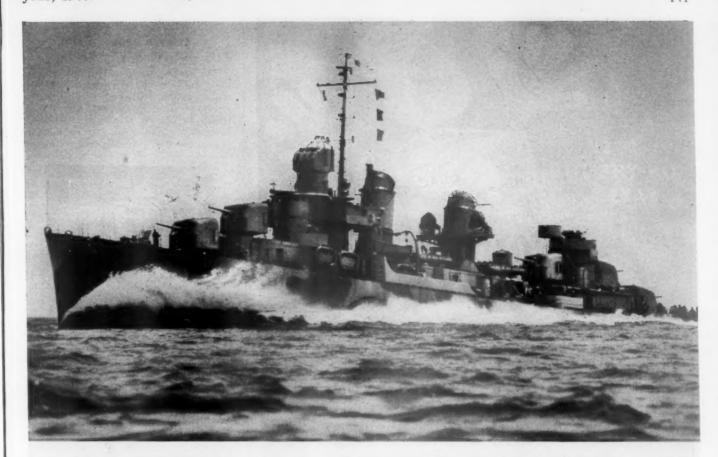
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#### A TRIBUTE TO THE BATH IRON WORKS

# from the makers of PENNSALT CLEANERS

• The first ship built in America, the "Virginia," was launched from the shores of the Kennebec in 1607. The Bath Iron Works Corporation is carrying on the tradition of the Kennebec today, launching destroyers like the one above. At its present rate of production, B.I.W. produces in one year more than twice as many of these ships as were launched by them during the entire World War I. Our hats are off to the men and women who have made possible this enviable record.

How fine these ships are is well expressed in the following extract from a letter written by the commanding officer of the destroyer pictured above:

"A word of praise for the grand job the Bath Iron Works did on the ship. She has been through h—l and high water and never failed us. Keep on building ships as fine as this . . . We have put on nearly one

hundred and fifty thousand miles and she is as good as new."

We of Penn Salt are proud of the small part we are privileged to play in this outstanding achievement.

Galvanized work on these ships is first cleaned with a Pennsalt Cleaner to insure a finish which will withstand the extreme corrosive conditions of the sea.

Paint stripping is another important use of Pennsalt Cleaners at the B.I.W. In fact there is a Pennsalt Cleaner scientifically designed for nearly every type of metal and maintenance cleaning.

Our chemical engineers will be glad to demonstrate the benefits of Pennsalt Cleaners to you in your plant. No obligation. Write fully to our Special Chemicals Division, Dept. P.

MANUFACTURING COMPANY

1000 WIDENER BUILDING, PHILADELPHIA 7, PA:





Maryland. With the new attachment, twin

jets of air are directed on each side of

Compressed Air Removes Chips

the milling cutter by means of copper tubing. The air current carries the chips into a duct attached to the machine, and they pass from the end of the duct into a mobile receptacle.

Prior to this invention, one worker was constantly required to brush the chips from the bed of the milling machine. Today this man is relieved for other duties. At the same time the new device maintains a clean shop. Finally, it segregates scrap at the source for the Conservation Department and keeps the chips from being contaminated by dirt and chips of other types of metal.

## MAKES SOIL WATERPROOF AND ELIMINATES MUD

A chemical method of preventing mud by making soil waterproof has been developed by Hercules Powder Co., Wilmington, Del., which has been proved in use on roads, airplane landing fields and other construction projects here and abroad. Its proper use means an end to muddy streets, factory yards, and so on. The name of the chemical product is Stabinol, a resin compound. By mixing it with the top few inches of soil a waterproof surface is obtained. The water will drain off or evaporate rather than seep through the treated soil and turn it into mud. The soil not only resists the penetration of surface water, but also the capillary rise of moisture from below, it is said.

### ISSUE NEW GAS AND ELECTRIC WELDING SUPPLIES LIST

Publication of a 20-page Revised Price List, "Gas and Electric Welding Supplies and Accessories, superseding similar previous lists, is announced by Air Reduction Sales Co., 60 E. 42nd St., New York 17, N. Y. The products in the revised list include Gas Welding Rods made in a (Continued on page 144)



JOMAC REGULAR INDUSTRIAL GLOVES

heat. Jomac's loop finish gives extra protection

to hands, extra long wear.

A modern work-glove that is semiheat resisting and gives as much
as 7 times the service of ordinary
work gloves. Jomac Fabric and
its hidden lock-stitch keep the
thick pile in place and provide
extra strength and wear. Jomac
Gloves can be washed repeatedly, kept clean . . . and
thus minimize the dangers
of dermatitis and other skin
infections.

TEST THEM!

Just try JOMAC GLOVES on your stiffest jobs. Test them for heat-resistance, for wear, for washability, for economy, for increased production. Write for full details.

# JOMAC WORK GLOVES C. WALKER JONES CO.

6135 N. Lambert St., East Germantown, Philadelphia 38, Pa.



# and tell it with MEYERCORD DECALS

Millions of non-lend-lease items exported throughout the world, a basis for incalculable wartime and postwar goodwill—now can be uniformly identified as "made in the U.S.A!" — with this new, official red, white and blue Export Seal designed and recommended by the Office of War Information.

Investigate Meyercord Decals for the reproduction of Export Seals or combination Seals and regular trademarks or nameplates. They provide highly legible product identification that last for the life of the product. They save time, cost, weight and metal, and require no screws or rivets for application. They are durable, washable, and can be produced in any size, colors or design . . . for application on rough, smooth or crinkled surfaces of any known commercial material. Billions are used all over the world.

Tell the world "It's from the U.S.A."...and use Meyercord Decals for low-cost reproduction of a multi-language program of product identification. Let us suggest combinations of the Seal with your own trademark. No obligation. Address Dept. 61-7

O. W. I's. new Export Seal may be used in any shape or size—in any language—alone or combined with your company trademark or nameplate. O. W. I. does not sell this Export Seal. Purchase may be made from a source of the exporter's own choice.



The nameplate illustrated demonstrates one of many ways in which the O. W. I. Export Seal may be combined with your own trademark economically with Meyercord decals.

This advertisement is published in cooperation with the Office of War Information. Full information regarding O.W.I.'s Export Seal Program may be obtained by writing to: Special Promotion Division, Office of War Information, 250 W. 57th St., New York (19), N. Y.



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the MEYERCORD CO.

5323 WEST LAKE STREET

CHICAGO (44) ILLINOIS

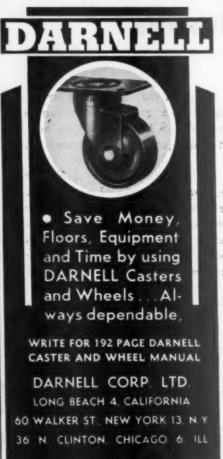
WORLD'S LEADING DECALCOMANIA MANUFACTURER

Ju





305 EIGHTH AVE. SO., MINNEAPOLIS, MINI



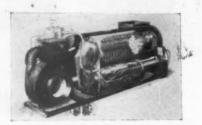
(Continued from page 142)

wide range of metals, types and sizes for all welding requirements. Other products listed and described are Hard-Facing Alloys, Brazing Alloys, Fluxes, Helmets, Goggles, Gloves, Aprons, Welding cable, cable lugs and ground clamps.

In addition to prices, the contents include detailed information of assistance to buyers, such as sizes, dimensions, weights, stock numbers, forwarding data and recommended uses for products. New items described are the Airco No. 66 Welding Helmet which is leakproof, the Suregrip Rod Saver which is claimed to effect savings in electrode cost of from 7% to 14% because only 5/8" of the bare electrode can be inserted in the socket, and the Atlas Model A Dual-Tool for cleaning welds, which is a chisel-headed chipping hammer combined with a wire The brush reversing bristle brush. feature is said to double its life.

#### HOURLY OUTPUT 90,000 BTU

Illustration shows aircraft heater of the combustion type, burning gasoline from a plane's tanks, developed by the Heating Division, Anchor Post Fence Co., Baltimore, Md. Now in use on



Cutaway view of heater showing travel of heat gases from burner at upper right through primary exchanger.

Nava? Pattol bombers, it combines the multiple function of cabin heating in flight and not in flight, with the transfer from one phase to the other automatically controlled. In addition to preferenting the engines for quicken takeoffs in arctic temperatures, it also defrosts windshield and bombardier's window. In tests it has functioned properly at temperatures togolow as 72 deg. below zero, and at altitudes up to 40,000 feet. It uses about the same amount of electricity as the average reading lamp. In flight the heater has an hourly output of 90,000 BTU.

#### FORESEE CARBIDE FORMING DIES

1 1 1 1

Ability to produce cemented carbide parts too large to be sintered in available furnaces—as well as special, thinwalled parts that tend to go out of round when pressed and then sintered in the regular way—has been made possible at Carboloy Company, Inc., Detroit, by the development of a "hot press" method which incorporates in one single oper-

(Continued on page 146)



Here's Bob—"on leave" from his peacetime job representing your Industrial Supply Distributor—and helping you to win the War.

Back in the old days he used to drive around overtime looking for supplies to keep your War Production going on schedule. He *still* is driving around overtime. The "job" he is chauffeuring today doesn't look much like the trim little bus he drove in '42—but the extra skill he is acquiring will stand him

and you in good stead, come peace days again.

You can show your appreciation for Bob's good work—and for everything your local Distributor is doing to keep you supplied with vital materials—by 'phoning your orders directly to the Distributor instead of writing the factory. You will help the manufacturer to route his production efficiently—simplify deliveries—relieve transportation tie-ups.

Get your essential materials the logical way-

Telephone your



FIRST!



The CLEVEL D

TWIST DRILL COMPANY 1242 EAST 49<sup>4</sup> STREET CLEVE LAND

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# WITH THIS 3-PLY BACKING WELDSKS just can't break...



# speed-up grinding safety!

Examine this 3-ply backing carefully, and you'll see why workers aren't afraid to speed up grinding when using WELDISKS – the disks that just can't break because they have this special 3-ply backing.

Notice the grit! Made of electric furnace treated aluminum oxide, it's the toughest abrasive in commercial use. Nothing like it for high-speed grinding on welds and any other tough grinding jobs.

Notice the fibre - specially treated and pressed for double strength and hardness! It's this layer that keeps WELDISK edges from going "flabby" under fast, heavy grinding pressures.

Finally, notice the layers of heavy cloth front and back of fibre. They're what keeps the fibre from cracking when bent.

Then . . . to round out your examination . . . write for free trial samples. All grits 320 to 16. Abrasive Products, Inc., 523 Pearl St., So. Braintree, Mass.



(Continued from page 144)

ation the three distinct processes of pressing, semi-sintering, and sintering.

The hot pressing method of producing large carbide parts—some of which weigh up to 100 pounds or more for the carbide alone—is proving extremely successful. So much so, in fact, that it is now believed that after the war, carbide forming dies for turning out such deep drawn articles as kitchen ware, headlamp shells, etc., can be manufactured economically by hot pressing.

The procedure, which employs electrical resistance heating to obtain the necessary sintering temperature, makes use of an hydraulic press capable of exerting a forming pressure of one hundred tons.

#### BIG METAL POWDER BEARING

Typical of the rapid progress being made in the art of manufacturing from metal powders is the self-lubricating bronze bearing illustrated, made by Amplex Division of Chrysler Corpora-



Self-Lubricating Bearing Made from Metal Powder

tion. Chrysler Corporation reports that production has been started on parts made from metal powders approaching 100 lbs. in weight. Developments in this comparatively new field of manufacturing also embrace new-type alloys of blended powers, making of tool steel from iron waste and vast strides in the production of self-lubricating iron bearings capable of carrying weight loads greater than 100,000 pounds per square inch.

#### 

New scale models of unit substation which will demonstrate how the right unit sub will look when it is installed, have been developed by engineers of the Allis-Chalmers Co., Milwaukee, Wis. With the aid of the models, it is claimed that perplexing power distribution problems can be worked out through the "building" of unit substations right on desks. Accurately scaled ½" to one foot, the models are exactly like the units needed in substation layouts. Allis-Chalmers field engineers will carry the models in sets which will also include single-line diagrams of possible unit sub-

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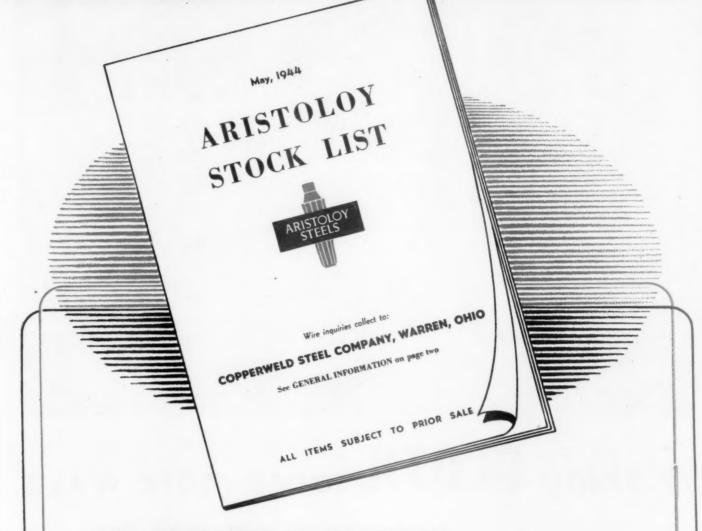
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# ARISTOLOY STOCK LIST



#### DID YOU GET YOUR COPY? WRITE FOR IT TODAY!

• Check the Aristoloy Stock List for any and all Alloy Bar, Billet, and Bloom requirements. All items avail-THE WILL TO MAKE GOOD STEELS. able for immediate shipment or prompt conversion.

#### COPPERWELD STEEL COMPANY

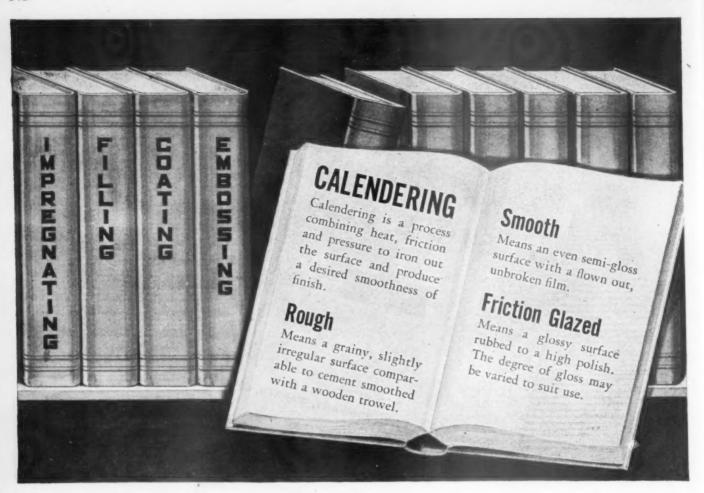
WARREN, OHIO

CARBON TOOL STEELS . ALLOY TOOL STEELS

STAINLESS STEELS . BEARING QUALITY STEELS

AIRCRAFT QUALITY STEELS . NITRALLOY STEELS

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# Making CLOTH serve more ways

HOLLISTON PRODUCTION

includes COATED and IMPREGNATED FABRICS . . . INSULATING NATED FABRICS . . . SEPARATOR CLOTH BASE . . . SEPARATOR CLOTHS TRACING AND BLUE PRINT CLOTHS White and blue, ink or pencil. MAP CLOTH, PHOTO CLOTH, self-ad-CLOTH, PHOTO CLOTHS, SIGN, LABEL AND TAG CLOTHS, waterproof to take any ink, meet waterproof, opaque, pregnated waterproof, opaque, translucent or light proof.

We urge you to consider CLOTH; and invite you to consult with us concerning possibilities and developments for your specific requirements.

Cloth as woven, is a structural base in or upon which may be built many colorings, finishes and coatings.

Cloth is flexible, has high tensile strength and is very durable. By special processing, cloth serves many purposes. Combining cloth with plastic types of fillings and coatings opens up many new industrial use possibilities.

Our business is specialty finishing of cloth to special needs. Our research department is devoted to perfecting and developing these processes.



# PLAN for the MAN with a

Is the problem one of finding sources of new production in the fields of electronics or radar? In that case G. I. has the facilities, experience and personnel to take on new assignments.

G. I. has, on official admission, already broken more than one production bottleneck. Leadership has been firmly established in the volume output of variable condensers with many circuit applications never before possible, complete wired assemblies and sub-assemblies, automatic tuning mechanisms, precision tuning devices and other items in electronic, radar and communication equipments.

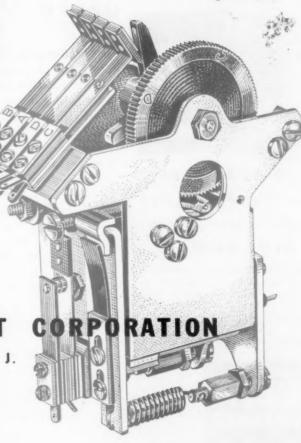
PROBLEM

If your problem is marked

Post War we may have the solution to that also, for our plans have long been formulated for the swing back into peacetime production with a minimum of interruption. As before, our Post War forte will be variable condensers and record changers — in addition to which there will be new items of considerable interest.

GENERAL INSTRUMENT

829 NEWARK AVE., ELIZABETH 3, N. J.





140 EXAMPLES from War-Production in Delta's new 76-page BLUE BOOK

This colorful book pictures and describes a wide range of applications actual case histories which give your production men a running start on your own special problems.

Write for Your Free Copy Today

In war plants the country over, specialpurpose machines have been built around standard Delta components at a fraction of the cost and in a fraction of the time ordinarily involved, increasing production 200% to 600%. By adopting this modern tooling practice, you can design a machine to do a specific job without tying up heavy capital in costly, complicated machines which are slow to build and difficult to adapt. The results are more production in less time at lower cost. In addition, this minimum capital investment is flexible - your machines are composed chiefly of standard elements which are readily convertible when change-overs are required. Investigate!

DELTA
MILWAUKEE
Machine Tools

	ELTA MANUFACTURING CO. Vienna Ave., Milwaukee 1, Wisconsin
	Please send me my free copy of your new 76-page Blue Book, and catalog of low-cost Delta tools.
Name	Position
Compan	y,
Address	
City	State

(Continued from page 146)

station arrangements, layout sheets scaled to the same dimensions as the models, and a "check list" providing other necessary engineering data.

1 1 1

#### OVERHEAD SPOT WELDING SUPPORT

An overhead support, similar in construction to a small crane, is providing the answer to one of the main limitations on the use of spot welding—the size and weight of assemblies that can be handled—at The Glenn L. Martin Company,



Overhead Support Cuts Down on Welding Time

Baltimore, Maryland. Traveling on small rollers on an overhead track, the crane-like support can be moved almost effortlessly in any lateral direction.

The support is of extremely simple construction, consisting of a horizontal beam which pivots from a supporting trolley on a pin which permits 360° rotation. The assembly to be spot welded is suspended from this beam by springs attached by means of quick acting clamps, and is counterbalanced for easy handling.

Not only has this new arrangement cut down on spot welding time, but more important, it has permitted the redesign from riveting of parts such as bomb bay and wheel well doors, formerly considered impractical for spot welding due to their size and weight, to take advantage of the more highly productive spot weld equipment.

1 1 1
NEW BONDING MATERIAL

Pliobond is the name of a new bonding material developed by the Goodyear Research Laboratory, Akron, Ohio. It is a rubber-like adhesive, and by its use it is said to be possible to cement a layer of plywood only 1/48" in thickness to a metal surface. A metal sheet of any thickness thus covered with a layer of any desired wood, can then be handled in the same fashion as the sheet alone. It can be bent into any chosen shape or form or cut with a shears or stamping press without cracking the wood or pulling it loose from the metal. Other metal units can be welded to the back of the metal sheet. In use, Pliobond is spread on the metal sheet, the layer of wood is placed over it and the "sandwich" is

(Continued on page 154)



THE BANDMASTER who boasts of musicians that "double in brass" knows he has an added value -something extra to give his audience. Many manufacturers feel the same way about the use of Anaconda Hot Pressed Parts in their products.

Let's take, for example, the C. A. Norgren Co. of Denver, Colorado, manufacturers of the Norgren Air Line Lubricator illustrated above. This pneumatic tool lubricator is placed in the air line and is automatic in operation-"it starts when the tool starts-stops when the air flow stops."

An Anaconda Hot Pressed Part was selected for the brass body for two reasons: First, this method of manufacture is ideally adaptable to its unusual design. Parts are uniform, more alike than peas in a pod. Clean, smooth surfaces, free of foundry sand, scale and dross, enhance its appearance, help to make machining easy, reduce scrap, increase tool life.

The second reason is even more important: These hot pressed parts have double the strength of ordinary sand castings, yet the total cost-per machined and tested piece-is little, if any, more. Being made of wrought metal, they are free from internal defects, are gas, air, oil and watertight . . . assurance of dependable, on-the-job performance.

The screw machine parts also illustrated above have a story of their own, as told by Mr. C. A. Norgren, General Manager:

"For many years we have used The American Brass Company's free cutting brass rod and tubing. Those were trouble-free years as far as our screw machine operations were concerned. Then came the war with the material controls with which all of us are now familiar. We did what everyone else would have done under the circumstances-shopped the market from Boston to San Francisco. Instead of one source of supply, we found we were purchasing 'free cutting brass' from as many as eighteen different sources.

"Many trade names were lost in the shuffle and, much to our surprise, we found that all brass rod was not good brass rod. We found it necessary to give unusual consideration to screw machine jobs where formerly trouble-free operation was the rule. We looked forward with pleasure to the time when The American Brass Company could again fill all our orders without restrictions and we could rely on our vast records of tooling, speeds and feeds which have proved so economical in our screw machine operations."



Anaconda Copper & Copper Alloys



Simplification is an economic necessity on an assembly such as this multi-pole, double-throw key switch made by the Kellogg Switchboard & Supply Company of Chicago. Used throughout the telephone industry and by manufacturers of radio, electronic and control equipment, this key, illustrated above in actual size, is made up of more than a hundred component parts—67 of them metal, and most of them copper alloys—from the brass escutcheon to the nickel silver springs.

Simplicity, accuracy and economy go hand in hand in the production of the two most complicated parts of this key—the cam and the frame. These two intricately formed pieces are literally "sliced" off long mill lengths of Anaconda Extruded-and-Drawn Shapes.

The slot milled, ten holes drilled and four tapped, the frame is ready for assembly—providing adequate strength and rigidity, and accuracy of contour and dimensions. The cams are milled to close tolerances, drilled and tapped. Integral pins for the rollers are shell milled—cam action is always smooth, no parts can work loose. Little wonder that similar Kellogg Keys, made of materials supplied by The American Brass Company, are still in service after twenty-five years of "24 hours a day, seven days a week" service on switchboards of some of the busiest exchanges.

Compare this method of producing complicated parts from readily machinable Anaconda Shapes with the costly processes involved by any other method—machining from bar stock or sand castings, stamped parts or built-up assemblies.

The American Brass Company produces copper, brass, bronze, nickel silver and special copper alloys in practically all commercial forms—sheets, strips, plates, wire, rod, tubes, special extruded, rolled and drawn shapes, hot pressed parts and pressure die castings. The manufacture of such a wide range of copper alloy products places us in a position to suggest "the one best metal to do the best possible job for a specific application." Our Technical Department will be glad to work with you.

#### THE AMERICAN BRASS COMPANY

General Offices: Waterbury 88, Connecticut • Subsidiary of Anaconda Copper Mining Company
In Canada: ANACONDA AMERICAN BRASS LTD., New Toronto, Ontario



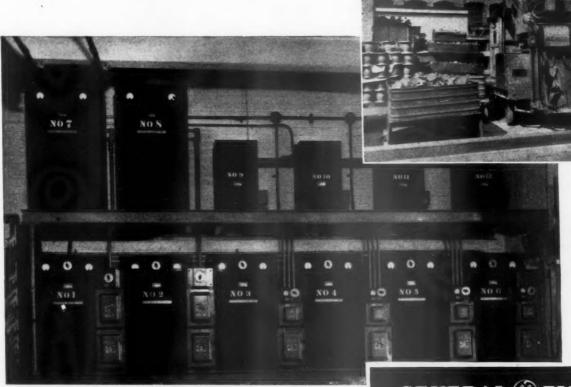
Anaconda Extruded & Drawn Shapes

# Monatic

ELECTRIC TRUCK BATTERIES



G-E Copper Oxide Rectifiers provide low-cost, efficient and fully automatic battery charging of electric trucks for one of the world's largest valve manufacturers. (Name and installation data on request.) The large picture shows the clean, compact, easy-to-operate installation of G-E rectifiers. The small picture shows a crane truck along side the charging house, getting a "noon-hour" boost. All the operator has to do is connect the cable to the truck battery and the rectifier does everything else. No experts are needed. And maintenance, compared with other types of battery-charging equipment, is virtually eliminated. There are no moving parts on G-E rectifiers except the cooling fan. G-E rectifiers are the economical, efficient, and up-to-date means of charging electric truck batteries. For full details write: Section A-747-77, Appliance and Merchandise Department, Bridgeport, Connecticut.



A crane truck gets a "noon-hour" boost while parked outside the charging house which contains the G-E Copper Oxide Rectifiers (left).

Hear the General Electric "All Girl Orchestra" Sunday 10 P.M. EWT, NBC; "The World Today" news every weekday 6:45 P.M. EWT, CBS.

BUY WAR BONDS BUY WAR BONDS GENERAL % ELECTRIC

# "Periodic Re-tightening NOT Necessary with BOOTS NUTS," say leading fleet operators



Tested successfully by R. H. Macy & Co.

Proved invaluable by United Parcel Service

Endorsed by Metropolitan Distributors, Inc.

ACTUAL service tests have proved that this nut can't shake loose. With its built-in allmetal lock, the Boots Nut defies vibration. Once it locks itself in place, it stays tight! Yet the Boots Nut can be adjusted or removed, and re-used, time and time again. And, being all metal, Self-Locking Boots are not affected by oil, gasoline, temperature or weather.

For the duration, Boots' entire output must be reserved for military aircraft. After victory, the Boots Nut will be available to you to assure fewer repairs and better all-round performance.





(Continued from page 150)

then put in a press under moderate pressure and heat for fifteen minutes. A lighted cigaret placed upon the wood surface fails to scorch it, it is said, because the underlying sheet of metal conducts the heat away too quickly.

#### PREPARES ALUMINUM SURFACES FOR SPOT WELDING

A new method for rendering aluminum surfaces chemically and metallurgically clean in preparation for spot welding, is announced by Turco Products, Inc. of Los Angeles and Chicago. Turco Vulco-Etch is a chemical bath which frees aluminum alloy surfaces of oxides, corrosive salts, and tenacious grease and oil films. Consistent, strong spot welds cannot be obtained if the aluminum surface is oxidized, oily or contaminated with corrosive salts.

Vulco-Etch lays the foundation for sound spot welding by assuring a chemically and metallurgically clean surface. Cleaning and etching are accomplished in a 5 to 20 minute dip in the Vulco-Etch solution. Unheated wood-lined, rubberlined or crockery tanks are used. The material rinses freely in fresh, cool running water. The Vulco-Etch solution is long-lived, and may be used for months without change.

#### SYNTHETIC CAN BE JOINED TO NATURAL RUBBER

Belting made with the new synthetic rubber from government plants, known as GR-S synthetic rubber can be joined to natural rubber belting with a vulcanized splice, according to the B. F. Goodrich Co., Akron, O. This makes it possible to use sections of the new GR-S synthetic belting to repair existing belting. The company's standard splicing and repair materials can be used.

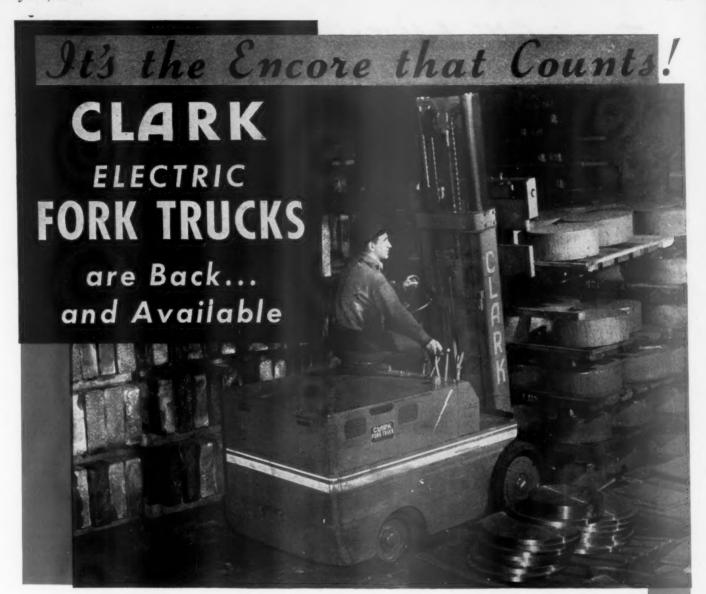
#### GLASS-ASBESTOS TEXTILE HOLDS MANY NEW USES

A new textile made by combining glass and asbestos fibers is being employed as a protective boot in war planes. In fabric form it is used for gun boots, tail-wheel boots, and—in the P-47 Thunderbolt—to protect retractable landing gear from the hot exhaust of the supercharger. In cord form the textile is used for shroud lines on military flares.

The glass-asbesto textile is intended for applications requiring high strength combined with light weight, high abrasion resistance, and resistance to high temperatures and corrosive fumes. In textile terms, the combination glass-asbestos cloth may be classified as an inorganic canvas or duck.

The textile is made either by combining glass and asbestos fibers to form yarns, or by combining glass and asbestos yarns in the weaving operation. The high strength of the material is primarily due

(Continued on page 156)



Concentrated effort on production of gas powered fork trucks for our Armed Forces curtailed the manufacture of Clark Electric Fork Trucks for a short time.

Increased productive capacity enables us to again serve the needs of Industry for dependable and proven electric fork trucks.

CLARK ENGINEERED and CLARK BUILT

If you need an electric fork truck NOW, phone, wire or write.



CLARK TRUCTRACTOR BATTLE CREEK, MICHIGAN, U.S.A.

OTHER CLARK PRODUCTS - AXLES (Front and Rear) FOR TRUCKS AND BUSES . AXLE HOUSINGS . TRANSMISSIONS . METAL SPOKE WHEELS ELECTRIC STEEL CASTINGS . GEARS AND FORGINGS . RAILWAY TRUCKS . BLIND RIVETS . HIGH-SPEED DRILLS AND REAMERS

# Time is Critical Material Conserve it With A Slide Rule



Work goes faster — because it's easier — smoother — with a slide rule at your finger-tips. Post slide rules "fill the gap" until better Post rules are available. Instruction manuals and leatherette cases included.

No. 1452D: Ten-inch Celluloid Face bevel edge slide rule. Inches and metric rules on bevel edges, List Price . . \$3.50

No. 1446D: Ten-inch Painted Face vertical edge slide rule. Inches and metric rules on vertical edges: List Price \$1.50

These "emergency" slide rules — for immediate delivery — have Scales A, B, C1, C, D, and K on front. On reverse: Scales S, L, and T.

THE FREDERICK POST COMPANY

CHICAGO

ST. LOUIS



**BLUE PRINT & PHOTO COPY COMPANY** 

816 PINE STREET

**CHESTNUT 0688** 

(Continued from page 154)

to the glass, while the asbestos increases abrasion resistance.

Applications to date point to many possibilities for the use of the new textile, but because of limited production it can be supplied only under a high priority or end-use rating. The textile is being supplied by Owens-Corning Fiberglas Corporation.

#### SUPPLEMENT TO THE UNITED STATES ARMY COLOR CARD

At the special request of the Quartermaster General of the United States Army, The Textile Color Card Association has issued a Supplement to the United States Army Color Card showing the official colors for arms and services, originally brought out by the association in 1930.

This Supplement, it was explained by Margaret Hayden Rorke, managing director of the Association, portrays samples of the three new colors officially adopted for Arms and Services by the Quartermaster General during the present world war. These are U. S. Army Brick Red, authorized for the Transportation Corps, together with U. S. Army Golden Yellow in the original card, and U. S. Army Old Gold and U. S. Army Mosstone, adopted for the Women's Army Corps. All are the Association's colors. The two additional Services for which colors are specified in the Supplement are the Armored Force and the Tank Destroyer Forces.

The above-mentioned new shades, together with the nineteen shown in the original card, comprise the official colors used for various purposes of identification on uniforms and equipment, as shoulder sleeve insignia and corded braids on garrison caps, to indicate the different branches of service of the United States Army. In addition to the four new listings in the Supplement, the twenty-five Arms and Services of the Army for which colors are designated in the original card are Adjutant General's Dept., Air Corps, Cavalry, Chaplains, Chemical Warfare Service, Coast Artillery Corps, Corps of Engineers, Detached Enlisted Men's List, Field Artillery, Finance Department, General Staff Corps, Inactive Reserve Corps, Infantry, Inspector General's Dept., Judge Advocate General's Dept., Medical Dept., Military Intelligence Division Reserve Corps, Military Police, National Guard Bureau, Ordnance Dept., Permanent Professors of the United States Military Academy, Quartermaster Corps, Signal Corps, Specialists' Reserve Corps, Warrant Officers.

The Quartermaster General's Office, Mrs. Rorke stated, has distributed a large quantity of the United States Army Color Card for the Official Colors for Arms and Services, as well as the Supplement, to its various depots throughout the country. Card may be secured from the Textile Color Card Association of the United States, Inc., 200 Madison Avenue. New York 16, N. Y.

#### Never Underestimate a Spring



#### WHEN THE WHISTLES OF VICTORY BLOW

... and the Axis starts spinning, a mite of the credit will go to springs on Allied equipment. Some of these springs were designed from the Hunter Data Book, a copy of which should be at your fingertips. Your signature on your Company letterhead brings a free copy to you promptly. You'll find it useful.

THOUGH a spring may be small, its importance can be out of all proportion to its size and cost. Design and manufacture are not necessarily difficult. Usually the tough job is to find the right spring for a specific application, considering the cost and tolerances allowable. This sometimes means boiling down elusive ideas of what the spring should do to concrete purposes from which specifications can be constructed. Clarifying the problem in these cases is not a job for amateurs, but for a

scientific spring maker. Research and calculation, mathematics and metallurgy, statistical control of quality, and unusual and original testing and inspection methods may all have to be recruited in the development of the right spring for your application.

But on such springs you can confidently rest the performance and reputation of your products . . . without a cloud of uncertainty over your head or a lump in your throat. Remember . . . now, and in the future, springs made right, make good!

THE GARTER SPRING—one of a number of basic spring designs, is essentially an extension spring. It is sometimes used as a belt to drive light machines, more often to produce a radial force as in the case of packing ring segments.



HUNTER PRESSED STEEL COMPANY, LANSDALE, PENNA.



PLOMB PULLER

Any pulling job is likely to be a mean job — unless you use a Puller you can depend on. Expert mechanics throughout war indusfries like Plomb Pullers because of the better, safer, longer-lasting service they give.

They choose the other service tools in the complete Plomb Line, too—for the same reasons. From tiny screw drivers to mammoth industrial wrenches, all are built to highest quality standards. Select the ones you need for your war job from the Plomb dealer in your neighborhood. — Plomb Tool Co., Los Angeles 54, Calif.



INE SERVICE TOOLS FOR ALL INDUSTRIES

#### GLASS JEWELS SURPASS SAPPHIRES FOR INSTRUMENTS

An essential part of our vast airplane program, millions of electrical instruments awaited a substitute for the jewels formerly supplied from Switzerland, now blockaded by the Axis. According to Westinghouse engineers, American ingenuity found a way to make these vital instrument jewels of glass. At first they were made slowly by hand, one at a time. At best a worker could make about 1200 a day, of which many were imperfect. Now they are turned out by automatic machines at the rate of 3500 per day—not only that, one girl can tend two machines that produce almost no poor jewels. For many types of instruments, engineers are said to prefer the jewels of glass to those of sapphire.

#### PLIOFILM COLLAPSIBLE TUBES

Utilization of Pliofilm in the production of collapsible tubes—transparent or in color, is announced by the Goodyear Tire & Rubber Co., Akron, Ohio. The tubes are said to successfully resist ingredients in many substance which deteriorate the material in some types of collapsible tubes, and to also offer the advantage of being lighter in weight. The tubes are readily printed. Various gauges of Pliofilm will be available after the war to suit differing products.

#### 1 1 1 "ROTARY BROACHES"

New technique in producing holes is announced by the Shearcut Tool Company, Los Angeles, Calif. It has been named rotary broaching, the tool being



#### Shearcut Rotary Broach

a broach that rotates as it cuts. The tool removes steel by a "true shearcutting knife-like action," the chips resembling steel wool in form and texture, and is said to produce accurate holes with excellent finish. Tool is being marketed with straight shanks only in sizes from ½" to 1" by one-sixteenths; and from 1½" to 1½" by eighths.

#### RADICAL NEW PLASTIC DEVELOPED BY MONSANTO

A new thermoplastic, said to be the first ever developed that can hold its shape and strength in boiling water, and yet can be molded by the fastest, most economical methods, is announced by the Monsanto Chemical Company. Known (Continued on page 162)



Take it easy, mister! There's an easy solution to your problem of Washers and Stampings.

Just send your blue-prints or specifications to us. For more than 25 years, we have specialized in producing Special Washers and Small Stampings, from steel, brass, copper and other metals. We have the "know-how" and the equipment to handle your requirements.

If one of our 10,000 sets of tools won't fill the bill, we'll make up special designs for you at reasonable cost.

Also a full line of Standard Washers—U.S.S., S.A.E., Burrs, Etc.—in kegs or cartons.

\*\*\* MASTER PRODUCTS ...

6400 PARK AVE.

CLEVELAND 5, OHIO

# NEW MIRACLE SAW



aster!

A stumbling block to industry's use of nonferrous metals during the important war years has been the difficulty of cutting them rapidly.

Now that problem is solved by the new DoALL Denress Band Saw, developed in the DoALL Research Laboratory to cut Magnesium, Aluminum, Zinc, Brass, Copper, Manganese Bronze, Tempoloy Bronze, Gray Cast Iron, Kirksite, Wood, etc.

#### MAGNESIUM

Approximate size 10 x 12 x 18<sup>N</sup>. Cut at the rate of 100 square inches per minute with this new DoALL Buttress-5 to 7 times faster than with usual metal saws.

#### ALUMINUM

Riser Rings from Ford Castings, nonheat treated. Cut at the rate of 90 square inches per minute. The new DoALL Buttress lasted for 108 cuts, a production increase of 400%.

SILICON ALUMINUM-30 to 33 square inches per minute.

14 ST ALUMINUM-24 square inches

ALUMINUM ARMOR PLATE 5/16"-25 to 30 lineal feet per minute.

ALUMINUM 24 ST 1"-160 square inches per minute.





The spectacular new band saw that has been tried out recently in a dozen large aircraft and other war plants with unheard-of-before results. Not only does smoother cutting, but does the work in 1/10 to 1/5 the former time. Fits any band sawing machine.

#### **NO SHARPENING REQUIRED**

Use the DoALL until worn out, then insert a new saw.

IMMEDIATE DELIVERY from all our Supply Points. Write for Literature and Prices.



























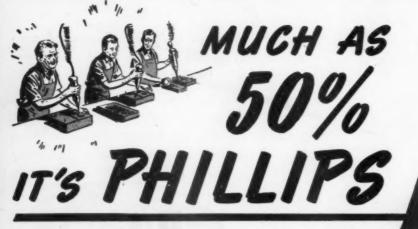
NEW SET

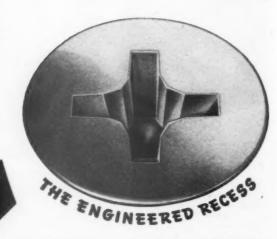
THE DOALL COMPANY

1214 Thacker St.

Des Plaines, III.

IT'S LIKE GIVING YOUR ASSEMBLY
LINE A SHOT IN THE ARM
TO SWITCH TO THE SCREWS
WITH THE ENGINEERED RECESS
THAT SPEEDS UP ASSEMBLY AS





Manufacturers in every industry can tell you that switching to Phillips Recessed Head Screws acts like a tonic to assembly lines.

To start with, you get faster—much faster—screw driving. Comparisons made in scores of plants prove that Phillips Screws step up fastening speed as much as 50%.

Next, Phillips Recessed Head Screws save precious man hours. The scientifically Engineered Recess utilizes the worker's full turning power and skill. Time and muscle are not wasted on wobbly starts, slantwise drives and dangerous driver skids – nor on correcting sloppy work.

Finally, with all this increased speed, you get vastly better workmanship. Phillips Recessed Head Screws make driving so simple, so steady that the most inexperienced operator soon becomes master of the trickiest fastening jobs!

If these are the kind of results you'd like, but aren't getting from slotted and other type screws, you owe it to yourself and to your workers to switch to Phillips – the screws with the Scientifically Engineered Recess. They cost less to use ... because they help you produce much more. Any one of the 23 manufacturers below will enable you to prove it in your own plant.

## TO MAKE WARTIME QUOTAS AND PEACETIME PROFITS

Fuster Starting: Driver point automatically centers in the Phillips Recess . . . fits snugly. Fumbling, wobbly starts, slant driving are eliminated. Work is made trouble-proof for green hands.

Faster Driving: Spiral and power driving are made practical. Driver won't slip from recess to spoil material or injure worker. (Average time saving is 50%.)

Easier Driving: Turning power is fully utilized. Workers maintain speed without tiring.

Setter Fustoning: Screws are set-up uniformly tight, without burring or breaking of screw heads. The job is stronger, and the ornamental recess adds to appearance.



IDENTIFY IT!



Center corners of Phillips Recess are rounded . . . NOT spuare.



Battom of Phillips Recess is nearly flat... NOT tapered to a sharp point.



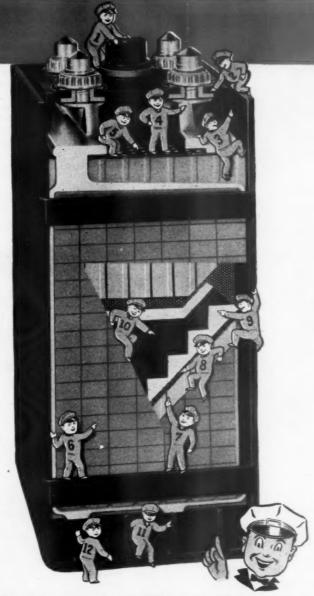
WOOD SCREWS . MACHINE SCREWS . SELF TAPPING SCREWS . STOVE BOLTS



American Serew Co., Previsence, H. J.,
The Bristol Co., Waterbury, Comm.
Central Serew Co., Onicage, III.
Chandler Preducts Corn., Cleveland, Onle
Cestinectal Screw Co., New Bedferd, Mass.
The Cowbin Serew Corn., New Bedferd, Mass.
The C. whin Serew King, Co., Chienge, III.
The N. M. Marper Co., Chienge, III.

International Serew Co., Detreit, Mich.
The Lamson & Sessions Co., Cleveland, Ohio
manufasturers Serew Products, Chicago, III.
Milford Rivet and Machine Co., Milford Coun.
The Sational Serew & Mig. Co., Cleveland, Ohio
New England Serow Co., Keena, N. H.,
Partner-Kalon Corp., New York, N. Y.
Partner & Berew Co., Partnerhof, R. J.

Phoof: Manufacturing Co., Chicago, 1ff.
Reading Serew Co., Norristown, Pa.
Rusself Burdanit & Ward Bolt & Nut Co., Part Chester, N. Y.
Scovill Manufacturing Co., Waterville, Cons.
Enakaprec Jun., Chicago, 18.
The Southington Mardware Mrg. Co., Southington, Cons.
Waterville, Part Co., Deposit, Mish.



## FEATURES THAT MAKE PERFECTION IN GOULD BATTERIES

Gould has been constantly testing and perfecting the design of the Gould Kathanode, while still retaining the revolutionary spun-glass mat protection first introduced by Gould to American industry.

Some improvements have been small, some large. Each has added to the battery's efficiency and has made it a better product. Together they continue to maintain the enviable twenty year record of the Gould Kathanode in meeting actual service conditions in all industries.

Write Dept. 47 for Bulletin 100 on Gould Kathanode Glassklad Batteries for Industrial Trucks and Tractors.

M. Y.

- **1** BAYONET TYPE VENT: Quarter-turn lock type readily removable for flushing and checking.
- 2 TERMINAL POST SEAL: Acid resisting soft rubber spool type bushing which acts as a cushion between post and cover. It is held in compression between a flange on post and an alloy nut to make an acid tight seal.
- 3 SEALING: Exceptionally deep recess between the jar walls and reinforced hard rubber cover is filled with a sealing compound of unusual elasticity and adhesion, to withstand vibration and insure a permanent seal.
- 4 CROSSBARS AND TERMINAL POSTS: Sturdy construction assures excellent conductivity and great mechanical strength.
- **5** SEPARATOR PROTECTOR: Perforated hard rubber baffle protects separators during testing.
- 6 NEGATIVE PLATE: Antimonial lead grid of interlocking bar design. The negative active material is a highly porous metallic oxide compounded to special Gould formulas. It assures close electrical contact, low internal resistance, and high sustained capacity in balance with the Kathanode positive unit.
- **7** DURAPOR SEPARATORS: Made of heat and acid resistant porous rubber with deep grooves and shallow web. They are mechanically strong and allow for free circulation of the electrolyte. Uniform chemical and physical properties assure balanced resistance throughout the cell.
- 8 PERFORATED RUBBER ENVELOPE: Holds the spun-glass mat in place and provides additional insulation.
- GLASSKLAD RETAINER MAT: Retains the useful, power producing active plate material throughout battery life.
- 10 POSITIVE PLATE: Antimonial lead grid of heavy cross-section is the holding structure for the positive active material, especially developed for Kathanode by Gould.
- 11 SEDIMENT CHAMBERS: The Kathanode Glassklad retainer mat minimizes shedding of active material. As a result sediment chambers are reduced to less than half the height necessary in ordinary batteries. This permits the use of larger plates with more active material and a greater volume of electrolyte above the plates where it is most beneficial.

12 HARD RUBBER JARS OR MONO-BLOC CONTAINER: Compounded to meet the rigid Gould specifications, providing great tensile strength and high impact resistance for long, uninterrupted service.

FOR EXCELLENCE IN STORAGE BATTERY PRODUCTION AT DEPEW PLANT

Since 1898 THE BATTERY PICKED BY ENGINEERS

GOULD STORAGE BATTERY CORPORATION, Depew, N. Y.

Factories: Atlanta • Chicago • Dallas Depew • Leavenworth • Los Angeles North Bergen • Rock Island • St. Paul Sioux City • Zanesville

- Buy War Bonds -



IN STEAMING JUNGLE and frigid arctic areas, war supplies protected by FIBREEN are arriving in usable condition despite direct exposure to the elements.

The weatherproof, tear-resistant, scuff-proof qualities that made FIBREEN the preferred protection for peacetime goods in transit are the very reasons why it is now an essential war need. When victory is won, FIBREEN will again be available for general use.

#### Cut Costs and Simplify Your Postwar Shipping ... Our Knowledge Is At Your Service!

Shipping methods in almost every industry have been improved, and costs reduced, by the use of FIBREEN. For over 24 years The SISALKRAFT Company has pioneered in the development and production of fibre-reenforced, waterproof wrapping materials.

Methods of using FIBREEN, developed by SISALKRAFT research engineers, have improved shipping methods with a resultant saving in wrapping and handling costs.

SISALKRAFT OF

In your postwar planning you may benefit from our 24 years experience in the uses of FIBREEN and other SISALKRAFT products — to protect your products from damage in transit - and to cut costs.

SISALKRAFT leadership is the result of the unmatched performance of its products and a research and engineering service that is constantly perfecting new, low-cost wrapping materials and methods for industry.

> Les SISALKRAFT belp solve your wrapping and shipping problems. Our knowledge is at your service.

Manufacturers of SISALRRAFT, FIBREER, SISAL-A, SISALTAPE AND COPPER-ARMORED SISALRRAFT

(Continued from page 158)

as Cerex the new plastic opens up an entirely new field of industrial and household applications by virtue of its ability to withstand sterilization, according to Monsanto. Present production is going entirely to war work.

Cerex is described as a "thermoplastic, readily moldable in standard molding machines, and combining high resistance to heat with resistance to strong, corrosive chemicals, excellent electrical insulating properties, and high rigidity and

#### GENERATORS FOR GAS ENGINE DRIVE



Direct current engine generators in sizes 1 to 200 K.W. for direct assembly to the engine frame or for belted drive, are announced by Century Electric Co., 1808 Pine St., St. Louis, Mo. The Generator is constructed to bolt directly to the engine housing and engine shaft. It is equipped with one ball bearing. The engine end of the rotor is supported by the engine bearing. Generators are built for voltages ranging from 15 to 600 volts for a wide variety of applications. Bulletin 18-1 covers direct current generators, and bulletin 18-21 covers alternating current generators.

#### 1 1 1 PRODUCE FLAME RESISTANT NITRO-CELLULOSE COMPOSITION

The first step towards successful production of a practical flame-resistant nitrocellulose composition has been made in Hercules Powder Company laboratories, according to a report made available to industry by the company's Cellulose Products Department.

The report describes the results obtained from varying the proportions of tricresyl phosphate and magnesium ammonium phosphate in a nitrocellulose formulation, and furnishes other tech-

nical information.

A good moldable flameproof plastic was obtained when the nitrocellulose: tricresyl phosphate ratio was held constant at 30:40 and the magnesium ammonium phosphate was varied from 30 to 60 parts.

A flame-resistant nitrocellulose composition has long been desired by industry and it is hoped that the results recently obtained in Hercules laboratories may aid in the solution of some practical problems, which when coupled with nitrocellulose's low cost may have par-

(Continued on page 164)



By Egmont Arens

Leading Industrial Designer

I predict quantity production, right after the war, of unsinkable boats with continuous skins, tougher and lighter than wood, hull and top sides molded in one piece of Co-Ro-Lite, a new molding material consisting of plastic bonded rope fibres. Scale models of such boats are now being tested under a variety of conditions, and hulls of similar construction up to 32<sup>th</sup> have already been successfully molded. Light weight, speed and low cost will be overall outstanding features. The skin-stressed monocoque construction produces a light weight hull and top. An aluminum aircraft-type engine, housed out of the way in a small space under the aft deck, will provide speed and low operating expenses. Production by molding assures low initial cost, and a one-piece hull, eliminating yearly overhaul and caulking, means low upkeep. Thus motor-boating will be a pleasure everyone can buy with their War Bonds when Peace is restored.

Note: The Weatherhead Company, one of the oldest and most important manufacturers of parts for the aviation, marine, automotive and other key industries, looks forward to the day when its four plants will be contributing to peacetime needs.

Look Ahead with



#### Weatherhead

THE WEATHERHEAD COMPANY, CLEVELAND, OHIO Manufacturers of vital parts for the automotive, aviation, refrigeration and other key industries.

Plants: Cleveland, Columbia City, Ind., Los Angeles Canada—St. Thomas, Ontario

> PREE: Write on company letterhead for "Seeds Of Industry"—a history of The Weatherhead Company, its many facilities and diversified products.





STAR Hand and Power Hack Saw Blades, and Flexible Back Metal-Cutting Band Saw Blades, are scientifically designed, carefully processed through manufacturing and heattreating operations - and there's a blade for every type of metal-sawing job. To aid users in the proper selection, use and care of hack saw blades. Clemson Bros., Inc., offers "Metal Cutting" a miniature textbook cov-

ering every phase of metal-sawing. Use the coupon to send for your copy.



#### CLEMSON BROS., INC. Middletown, N.Y.

Please send me a copy of your booklet "Metal Cutting".

Kind of work \_



(Continued from page 162) ticular significance in postwar developments.

The company emphasizes that the data outlined is of a very preliminary nature and that it has been made available in order that the suggestions in it might be used as a basis for further erperimental work in industries such as lacquer, plastics, coated textiles and similar industries.

#### WHITE COMPANY USES FERRETS TO GET RID OF RATS

The White Motor Company's plant in Cleveland is using a posse of five ferrets to kill off rats. Prior to using the ferrets the company employed a rat exterminator



Ferrets Prove to Be Good Rat Exterminaters

without complete success. Today the problem is well under control. The ferrets are kept in special cages during the day and at night they are released to go their way in quest of rats which they follow through partitions, under floors and into shipping crates. Always they return to their cages in the morning. The ferrets are fed a diet of bread and milk and given a bath twice a week with a mercury solution and castor oil.

#### CHAIN LINK FENCE FABRIC EXCLUDED

The definition of "wire rods, wire and wire products" contained in Schedule 1 of Controlled Materials Plan Regulation No. 1 has been modified to exclude chain link fence fabric from the controlled materials forms and shapes of carbon steel, the War Production Board announces.

Schedule 1 of CMP Regulation No. 1 designates the forms and shapes of steel that are controlled materials.

#### STOPS 16,000 RPM MOTOR IN LESS THAN 6 REVOLUTIONS

A new magnetic brake, which will stop a 1/9-hp motor traveling at 16,000 rpm in less than six revolutions, has been developed by Chester I. Hall, General Electric industrial control engineer. "Another way of expressing the force with which (Continued on page 168)

40(0)

#### X-RAY — PHOTOGRAPHIC — FILM PROCESSING INSTALLATIONS

Self-contained Cabinet Models, with cooling unit in upper section and refrigerating machine in lower compartment . . designed especially for film processing installations. Three models available
... hourly capacities of 43, 95 and 175 gallons, reducing water from temperature of 80 degrees to 65 degrees, with cold water storage of 5, 14 or 25 gallons ready to meet emergency requirements.

WATER FREE FROM ALL SUS-PENDED MATTER will improve the appearance of finished films or photographs. Use Filtrene Water Filters with all film processing installations.

Write for Complete Information.

#### FILTRINE MANUFACTURING CO.

53 Lexington Ave. Brooklyn 5, N. Y.
"Manufacturing Filtering and Cooling
Equipment for 40 years"



#### PROMPT SHIPMENT FROM STOCK - ESSENTIAL TOOLS TODAY

because they save hours of time, prevent costly breakage and long shut downs.
STEELGRIP Standard Rigid Arm Gear and Wheel Pullers are of improved design. Will not slip from work. Arms are forged and heat-treated. 2-arm. 3-arm and special models. 12 types and sizes.
CHAINGRIP Universal Pullers pull wheels, solid gears, pinions etc., even at considerable distance from end of shaft. Proof-tested chains have both chain hooks and special pulley hooks. 3-ton and 12-ton capacities.

Write for Catalog Sheets

ARMSTRONG-BRAY & CO.
"The Belt Lacing People"
5378 Northwest Highway, Chicago 30, U. S. A.





# THE FIRST LABORATORY TEST FOR CONTROLLED QUALITY

The Macro-Etch test reveals uniformity of quality and steel composition. Unprecedented facilities were developed and built by Ladish to insure the maintenance of controlled quality. This test is given to samples of each heat of steel received at the plant.

The Ladish heat code, permanently

stamped on every Ladish green painted forged steel flange, identifies the specific heat of steel from which the flange was forged. Complete certified reports of chemical, physical and spectrographic tests, of which the Macro-Etch test is one, attesting the quality of the steel can be obtained from Ladish Drop Forge Co.

Steel identity stamped on each flange was pioneered by Ladish and has been a Ladish standard for many years





#### LADISH DROP FORGE CO.

CUDAHY . WISCONSIN

MILWAUKEE SUBURB

New York Office: 60 East 42nd Street, New York City

# Engineered for Leadership



# by Black & Decker in Personance

Black & Decker Bench Grinders are standard equipment in countless shops and plants all over the country. They've got the *design* for quick, easy work on large and odd-shaped pieces. They've got the *speed* for tool sharpening, wire brushing, buffing and polishing. They've got the *power* and *torque* for heavy-duty grinding and general shop work.

That's because each part in every Black & Decker Tool is specifically designed and made for the job it has to do. For example, Black & Decker uses no *stock* motors. The motor in any Black & Decker Tool is engineered and built completely by Black & Decker—to deliver maximum efficiency and performance in that particular tool.

Engineering leadership and precision workmanship have made Black & Decker the world's largest manufacturer of Portable Electric Tools. And those same qualities explain why any Black & Decker Tool gives you more service, more efficiency, more downright satisfaction.

Next time you need electric tools, or help on any tooling problem, call your nearby Black & Decker Distributor. The Black & Decker Mfg. Co., 764 Pennsylvania Ave., Towson 4, Maryland.

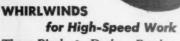








ELECTRIC HAMMERS



These Black & Decker Brushes have each tuft of wire held by a patented lock—separately, securely! Sizes: 4" to 12". Three brush widths, Three sizes of wire.

ELECTRIC SANDERS



Can you match that finish? Sounds phenomenal, but you can do it with Chicago Wheels. And, the secret of their superiority lies in the new FV Bond, developed exclusively for Chicago Wheels, after 50 years' experience making wheels for the most accurate and precise applications.

finishing eliminated on this job.

#### Here's What FV Bond Will Do for You

- \* Reduce your wheel costs
- \* Produce a better finish without sacrifice of production time a finish so smooth that you can measure it in micro inches.

#### TRIAL WHEEL FREE

Write or send the coupon today for a Chicago Wheel, made with this remarkable new FV Bond. Tell us grinder you use, size wheel and kind of material on which you will make your test. For the duration, with full WPB approval, we are specializing on small sizes—anything up to 3" in diameter.

Write for Catalog and one of the new Engineering Survey Forms, a step in the direction of better finishing.

CHICAGO WHEEL & MFG. CO.

America's Headquarters for Mounted Wheels and Small Grinding Wheels

1101 W. Monroe St., Dept. PG, Chicago, III.



Half a Century of Specialization has Established our Reputation as the Small Wheel People of the Industry.

Send Catalog	and	Survey	Form.	Inter	PG-7 rested in
☐ Mounted	Wheels.		□ G	rinding	Wheels
Send Test	Wheel.	Size .			
Name					
Address					

(Continued from page 164) this new brake works can be gained by comparison with an automobile, "Mr. Hall explains. "The outside edge of this motor, moving at 16,000 rpm, is traveling at 62 miles per hour. Stopping it within six turns would be the same as bringing a mile-a-minute auto to a dead stop in 2.73 feet. It is called a magnetic brake but magnetism plays no part in its stopping operation. A cork shoe and friction does the trick," according to Mr. Hall. "Magnetism releases it, once the need for braking is removed. The motor is braked at all times, except when current is applied."

#### RELEASE INFORMATION ON NEW STORAGE BATTERIES

Revolutionary new storage batteries developed for the Army and Navy by the Willard Storage Battery Co., Cleveland, O., were recently disclosed. An outstanding characteristic of the new batteries is their high electrical capacity in relation to their size. One of the batteries



Willard Battery ER-40-4 4 Volts. capacity 42 ampere hours at 20-hour rate. Length 61/4"; width 55%"; height 4-3/16"; weight 11 lbs.; built-in specific gravity indicator.

is only 29/32 of an inch high and weighs only six ounces. All of the batteries have transparent polystyrene plastic containers, and most of them use Fibrite, a new insulation developed by Willard from 90% of the electrolyte within a cell. Nonspill construction is achieved by extending the walls of the vent tube downward so as to trap the 10% of the solution remaining free. Because the insulation absorbs so much of the electrolyte, the batteries continue to function when their containers are cracked, broken or even shot away. Some of the batteries have specific gravity indicators molded into their transparent plastic containers.

#### 1. 1 1 ORDERS FOR STEEL FORGINGS

Steel forgings in controlled material forms and shapes must be ordered by distributors under the provisions of Order M-21-b-1, rather than through the use of Form WPB-2444 (formerly CMP-11), the War Production Board advises.

This action, which brings the rule into conformity with Order M 21-b-1 as recently modified, is taken by Direction No. 25, as amended May 30, 1944, to CMP Regulation No. 1.

# GAIR BY AIR

New York to San Francisco 17 hours— New York to Hongkong 44 hours. Distance is no longer measured by miles but by minutes. Because weight is a first consideration, Gair products play a vital part in the field of ever narrowing horizons. New merchandising methods, bringing an unprecedented need for Gair Corrugated Boxes—assure maximum air cargo at minimum tonnage.



Write for Booklet "Air Cargoes"

Save Waste Paper for war production

ROBERT GAIR COMPANY, INC., NEW YORK . GAIR COMPANY CANADA LIMITED, TORONTO Folding Cartons . Box Boards . Fibre and Corrugated Shipping Containers



SEND YOUR ORDER TO

1238 W. Monroe Street, Chicago 7, Ili., U.S.A.

**ENERAL SCREW** 

Manufacturing Company

#### WPB-OPA DIGEST

Metal Windows-WPB-Metal windows may now be manufactured to fill orders with preference ratings of AA-5 or better. (Amendment to Order L 77.)

Shoe Rationing-OPA-Shoe rationing will continue until there is marked improvement in supply situation according to OPA and WPB's Leather and Shoe Division and Civilian Requirements.

Silver Regulation-OPA-Revised regulation that codifies and supersedes existing regulations and orders applicable to silver in form of bullion, semi-fabricated articles and scrap was recently issued. (RMPR 198.)

Iron and Steel Resales-OPA-has exempted iron and steel resellers under certain conditions from complying with a provision in its price schedules covering resale of iron and steel products which requires special invoicing of excess stocks. (Amendment 24 to RPS 49.)

Packaging Men-WPB-Arrangements have been made to place men with technical knowledge of packaging industry's problems in regional and larger district

Wiping Cloth-OPA-Seven changes in the wiping cloth regulation designed to facilitate supplying of badly needed wiping cloths to Armed Services and to war announced. industries were recently (Amendment 2 to MPR 484.)

Basic Metals-WPB-Supply of and demand for basic metals for all essential military and civilian programs are more nearly in balance than at any time since Pearl Harbor, according to S. W. Anderson, WPB Program Vice Chairman.

Allotment Procedure Extended-WPB-Permission to use blanket construction allotment procedure, applicable to industrial construction and recently applied to certain types of military construction has been extended to certain public utilities.

Priority Procedure Modified-WPB-Technical amendment of PRO P-56 provides that Form WPB 1319 need not be filed in cases where another order prescribes a special application form.

Coal Storage—Department of Interior-Government coal stockpiling program now under consideration will not relieve consumers of necessity to build own storage of coal as far as supplies permit.

Metal Lath-WPB-Provisions governing use of metal plastering bases and metal plastering accessories have been removed from Order L-59-b as amended.

MRO Supplies-WPB-Rules governing use of maintenance, repair and operating supplies procedure for obtaining minor capital additions have been clarified. (In-(Continued on page 172)

#### Everlasting Frucks

To prevent wear and provide added strength and rigidity, Fairbanks Hand and Platform Trucks are reinforced with metal.



Every part subject to excessive wear can be replaced easily and cheaply.



Write for Catalog 51-52.

#### THE FAIRBANKS COMPANY

393 Lafayette St., New York 3, N. Y. Pittsburgh, Pa.

PLATFORM, HAND and BOX TRUCKS



Decrease fire hazards wherever oily waste and inflammable material are used. With or without foot lever, Approved by Underwriters' Laboratories, inc. and Associated Factory Mutual Fire Insurance Companies.

ROCHESTER CAN COMPANY 90 GREENLEAF ST. ROCHESTER, N. Y.

#### TOUGH MOTOR JOB?... AND HOW!

"Double the horsepower, increase pumping capacity 50%, cut the weight to one-third."

These were the requirements when Star resumed production of submersible pumps for the Navy at the outbreak of the war. Developed by Star after the first World War, pumps were required to deliver water at a rate of 135 gallons per minute at a head of 35 feetto operate only a few hours at a time. And now-double the head to 50 feet—igcrease delivery to 180 gallons per minute, provide continu s operation!

Star engineers—Specialists in "TIGHT SPOTS"—met the requirements and surpassed them—with motors that exceed the pumping requirement of 180 gallons per minute —that have operated continuously on test 6271 hours at a time, to pump 75,252,000 gallons of water. That's 314,365 tons of water—und still going strong!

Perhaps you'll never need a motor to meet such extreme needs. But isn't it a satisfaction to know that your motor requirements can receive the same STAR engineering?

BLOOMFIELD, NEW JERSEY

STAR ELECTR MOTOR COMPANY • Time: October, 1943. Scene: The Coral Sea. An American cruiser is torpedoed; water is pouring in through a huge hole below the waterline. Forward gun turrets have been shot away. Powder-fed flames leap nast-high. Jap shells inflict additional damage as the cruiser turns from the scene of battle, supposedly in sinking condition. But she doesn't sink! Submersible pumps go into play as seamen stuff gaping holes with blankets, mattresses; shore up bulkheads. With the help of Submersibles the battle with the sea is won, the U. S. Cruiser lives to fight again.

POWER PACKAGED AS YOU NEED IT

TAR MOTORS



Official Navy Photograph

STANLEY STEEL STRAPPING gives the needed extra protection against the many handlings and "hurry-up" treatment of wartime shipments.

Valuable cargo space is provided when packages are strapped with the strong hands of Stanley Steel . . . instead of bulky wooden reinforcement . . . and this space is saved at no sacrifice of packing strength.

By land, sea and air, shipments of war materials are protected for safe arrival at overseas destinations by Stanley Steel Strapping.

STANLEY

THE STANLEY WORKS STEEL STRAPPING DIVISION NEW BRITAIN, CONNECTICUT

(Continued from page 170) terpretation 11, as amended May 22, to CMP Reg. 5.)

Civilian Gas—PAW—Revocation of the limitation on the volatility of civilian gasoline was announced by Acting Petroleum Administrator Ralph K. Davies.

Machine Tool Needs—WPB—Estimated total machine tool requirements for 1944, including backlog of unfilled orders, may exceed \$600,000,000 as result of heavy artillery and other new military programs.

Resins Restricted—WPB—All authorizations issued prior to April 1 for use of phthalic anhydride resins have been revoked. Simultaneously Direction 2 to GPO M-139 was issued.

V-Boxes—WPB—Inventory restrictions for new fiberboard shipping containers apply to V-boxes as well as to containers for civilian use. (Interpretation 2 to Fibre Shipping Containers Order L-317.)

Box Prices Raised — OPA — Maximum prices for producers of southern rotary cut box grade veneer used to manufacture containers required for war goods shipment and essential civilian items were raised \$5 per thousand board feet. (Amendment 9 to MPR 176.)

Price Regulations Extended — OPA — Regulation governing prices for special sales of idle or frozen materials have been extended to include idle machinery, tools, and other assembled products. (Amendment 2 to RMPR 204.)

Treated Coal—OPA—Bituminous coal treated with oil or chemical may be sold by certain producers with an added charge of 10¢ per ton if five specified conditions are met and if producers are in bituminous coal producing Districts Nos 2, 3, 7, 8, 9 or 13. (Amendment 98 to MPR 120.)

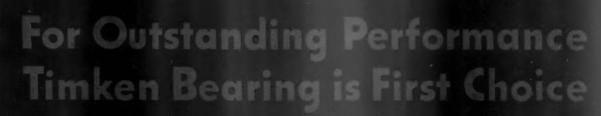
Repair Parts—OPA—is prepared to uprate to AA-1 orders for certain repair parts used by the refrigeration and air conditioning industry.

Cadmium Inventory—WPB—Users of cadmium are now permitted to maintain a 30-day inventory of cadmium-containing items based on current rate of deliveries. (Amendment to Order M-65.)

Safety Shoes—OPA—If women's protective occupations shoes made with plastic or fibre box toes were shipped from the factory before May 16, 1944, they may continue to be classified as "safety shoes" and sold in exchange for special "safety shoe" stamps. (Amendment 60 to RO 17.)

Vegetable Wax—OPA—Price schedule prepared to be inserted in present regulation governing vegetable waxes (MPR 264) giving maximum prices American buyers may pay for products purchased in foreign countries for importation to this country.

(Continued on page 174)







Industry knows that back of each Timken Bearing is the world's foremost group of anti-friction bearing specialists—men who possess a wealth of engineering and practical knowledge. Only such wide experience can produce the advanced Timken Bearing—a bearing that is unequalled for each particular job.

THE TIMKEN ROLLER BEARING CO. CANTON 6, OHIO

Timken Bearings, Timken Alloy Steels and Tubing and Removable Rock Bits

BUY WAR BONDS



# It's the production ingenuity of Western Automatic engineers that assures you flawless small parts in large volume

Small parts made with unerring precision are vital these days when the lives of our fighting men depend on them—but just as important is the need to produce them fast, in huge war quantity. Western's engineering ingenuity shines at that...for instance, on this airplane carbureter idle-valve bushing, machined from solid brass. It moved through with speedy exactness in spite of multiple finishing operations, because of special fixtures which carried it through milling and punching operations and assured accuracy of

position of slots and half-round holes. You'll need this kind of fast accuracy post-war — write for the story of Western's skill and vast modern capacity now.

Send for this valuable new catalog of Western Socket Screws—complete data, 32 pages.





(Continued from page 172)

Glass Containers—WPB—Paper was emphasized as the number one problem of glass containers industry at a recent meeting of Glass Container Manufacturers Industry Advisory Committee.

Oil Production—PAW—Crude oil production and manufacture of petroleum products are not keeping pace with military and essential civilian demand, thus necessitating continued draft on inventories.

Civilian Gas Quality Declines—Bureau of Mines, Department of Interior—reports average octane rating of gas sold to motorists during winter, 1943-44 was 71.7 for regular-grade; 75.8, premium grade; 60.5, third grade as compared with rating for winter, 1942-43 of 72.5, regular; 79.6, premium; 63.1, third grade.

Oil Equipment—PAW—Oil operators do not need priority ratings to purchase either new or used equipment from another petroleum operator or from a supplier acting as intermediary in resale of equipment, according to Deputy Petroleum Administrator Ralph K. Davies. (Amendment to PRO P-98-c.)

Civilian Lacquer Solvents—WPB—Because of improved supply of normal butyl alcohol, normal butyl acetate, secondary butyl alcohol and ethyl acetate, Chemicals Bureau Protective Coatings Branch plans to allocate limited quantities of the solvents for nitrocellulose lacquer and thinner.

Fuel Oil Purchase—OPA—Fuel oil consumers may use Period 1 ration coupons for 1944-45 heating year immediately upon receiving them from their local War Price and Rationing Boards. (Amendment 10 to RRO 11.)

Paper Sacks—WPB—There will be no restriction on use of paper shipping sacks required for shipment of essential products, according to Burton A. Ford of WPB's Paper Division.

Cartons Restricted—WPB—Most items in domestic economy will be limited by quota in use of new solid fibre and corrugated shipping containers. (Fibre Shipping Container Order L-317.)

Burlap Bag Quotas Off—WPB—Quota restrictions on acceptance of new burlap bags have been eliminated, although inventory restrictions remain unchanged.

Surplus War Property—SWPA—WPB will cooperate with procuring agencies of armed services in disposing of property left over from terminated contracts.

Container Supplies—WPB—Purchasing agents and users of shipping containers whose products do not carry high priorities are experiencing difficulties in obtaining adequate containers and suppliers may become shorter according to P. F. Paul, chief of Fibrebox Section, WPB Paperboard Division.

of

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### Quicker Deliveries of Stainless Steel CAN NOW BE MADE

Rustless concentrates on Stainless Steel billets, bars and wire. Deliveries are better than they have been for almost four years.

> May we quote on your requirements?

### RUSTLESS

Producing STAINLESS STEEL Exclusively

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SALES OFFICES: BUFFALO . CHICAGO . CINCINNATI . CLEVELAND . DETROIT . LOS ANGELES NEW YORK . PHILADELPHIA . PITTSBURGH . ST. LOUIS . DISTRIBUTORS IN PRINCIPAL CITIES

# Among the ASSOCIATIONS

#### MERRILL HEADS N. Y. ASSOCIATION

Retiring President Aeby Reports Total Membership of 585—Gain 113 During Past Year

Millard W. Merrill, United States Metal Refining Co., was elected president of the Purchasing Agents Association of New York at the annual meeting of the association June 13 at the Builders Exchange Club. Other officers elected are:

MILLARD W. MERRILL
President, New York Association

World War I he was connected with the Chemical Warfare Service. He has been connected with the United States Metal Refining Company for twenty-four years. For the past four years he has been chairman of the Fuel Oil Committee of the National Association, and for the past two years he has been chairman of the Forum Committee of the New York Association.

Vice President David Meeker has for the past two years been chairman of the New York Association's Program Committee. Following World War I when he was connected with the Curtis Airplane and Motor Corp., he was with the National Aniline & Chemical Co., Buffalo, and joined the Celluloid Co., Newark, N. J., 15 years ago, of which he became Purchasing Agent. When that Company was taken into the Celanese Corp., he became General Purchasing Agent for Celanese in New York.

Vice President H. W. Macintosh has been with L. O. Koven & Bro., Newark, N. J. as Purchasing Agent for the past North Carolina, whose subject was "Does It Make You Tired to Rest?"



NORMAN O. AEBY National Director

Retiring President Norman O. Aeby reported that from a membership of 472 as of June 1, 1943, the association roster was increased to a total of 585 as of June 1, 1944, just 15 short of the goal of 600 set for the end of the association year.

#### C. F. FEHNEL NEW PRESIDENT OF LEHIGH VALLEY ASSOCIATION

The following officers and directors were elected for the 1944-45 term at the annual meeting of the Lehigh Valley Purchasing Agents Association, held at Harker's Hollow Country Club, Phillips, N. J., May 22:

President, C. F. Fehnel, Penna. Dixie Cement Co., Nazareth.

Vice-President, W. W. Kellow, General Supply Co., Easton.

Secretary, K. W. Shook, Victor Balata & Textile Co., Easton.

Treasurer, E. H. Wieder, C. Y. Schelly & Bro., Allentown.

Directors, C. R. Laros, Lehigh Foundries, Inc., Easton; H. W. Truchsess, Alpha Portland Cement Co., Easton; T. H. Garrison, Trexler Farms, Allentown; Louis R. Albright, Jr., Albright Son & Co., Allentown; C. O. Richards, Taylor-Wharton Iron & Steel Co., Easton; and G. A. Hildenberger, Bethlehem Steel Co., Bethlehem.

National Director, R. T. McClarin, Allentown Paint Manufacturing Co.

More than 130 members and guests were in attendance at the meeting, which was featured by community singing led by Dr. L. R. Dohm, president of the Warren Foundry & Pipe Co., Phillipsburg, N. J., accompanied by Roxy Reif of Allentown and his piano accordion.

President R. T. McClarin presided at

F----

(Continued on page 178)



H. W. MACINTOSH 2nd Vice Pres.



DAVID M. MEEKER 1st Vice Pres.



EDW. B. FIELIS Treasurer

First Vice President, David M. Meeker, Celanese Corporation of America;
Second Vice President, Harold W. Macintosh, L. O. Koven & Bro., Inc.
Treasurer, Edward B. Fielis.

Member of Executive Committee, threeyear term: Nathan Alexander, American Safety Razor Corp.; and Frederic W. Thomas, Worthington Pump and Machinery Corp.

President Merrill has served two terms as vice president of the association. He is a native of New England and a graduate in chemistry of Massachusetts Institution of Technology. During the

24 years. In 1942 he was elected a director of the company.

#### 23rd Year as Treasurer

Treasurer Edward B. Fielis, is now entering his 23rd year as treasurer of the association, and through good times and bad has kept the association close to its budget as its sound financial condition attests. Until his recent retirement he was Purchasing Agent for the New York and Queens Electric Light and Power Co. for 31 years.

Speaker for the June 20 meeting was Dean R. B. House of the University of



10% MORE TONS -MORE LOADS PER DAY

> PHILCO BATTERY PLATE



ORDINARY BATTERY PLATE

There's no mystery about why modern extra capacity
Philco Batteries step-up the work capacity of your
industrial trucks by 10% or more. There is a purely
mechanical reason. Philco plates are larger. Their
physical dimensions are greater. And a Philco is so
constructed that it gives this 10% more power capacity
in the same compartment space. That's why a Philco
Battery, type for type, provides an extra reserve of
power—why the voltage stays up longer—why the
battery lasts longer. Ask for latest Philco Industrial
Truck Battery catalog. PHILCO CORPORATION,
Storage Battery Division, Trenton 7, New Jersey.

Specify

PHILCO

INDUSTRIAL TRUCK

BATTERIES

Backed by 50 years of experience in industrial storage battery development

A HEAD START is mighty ESSENTIAL--



WE CAN HELP YOU GET A HEAD START ON POSTWAR MARKETS

field of

tomorrow

because ---

We are specialists in every phase of screw machine parts manufacture and RECONVER-SION in our plant is a simple process.

PLAN YOUR
POSTWAR PRODUCTS
WITH PARTS

from

U-S-AUTOMATIC

Screw Machine Products



Chicago Detroit

New York

(Continued from page 176)

the business meeting, and presented medals to members having a 100% attendance record during the past year. These were F. G. Bachman and E. H. Wieder of Allentown, P. J. Werst of Bethlehem, K. W. Shook and C. R. Laros of Easton, J. A. Nork and C. K. Hagy of Catasauqua

Four new members were admitted to

membership.

guests played golf, golf balls being awarded as prizes. Blind bogey winnerwere C. V. Fish and T. C. Neil of Allentown, and W. T. Dougherty of Bethlehem. Low gross was won by Fred Wickham of Reading. Awards for the greatest number of strokes on the fourth hole went to J. H. Stover, III, Easton, and for the highest score to W. J. Roberts, Jr. of Allentown.

Guest speaker at the dinner meeting was Dr. Nathan Howard Gist of the National Association of Manufacturers, who spoke on "The Final Test of

Democracy".

ANNUAL STAG OUTING AT LOUISVILLE

Members of the Purchasing Agents Association of Louisville, Ky., held their annual stag outing at the Pastime Boat Club (Upper River Road—First Lane beyond the Pumping Station—Watch for Auto Club direction sign), June 19th. First on the table of diversion and pleasures were listed horse shoes, shuffle board, badminton, tennis, and soft ball, topped off with golf competition at the Crescent Hill Golf Club, and a buffet supper.

President Calvin H. Marcus, has announced completion of the following committees with chairmen as indicated:

Attendance, J. T. Kinberger; Auditing, Harold M. Booth, Jr.; Budget, Edgar E. McCulley; Convention, W. M. Kerrick; Golf, Geo. C. Helm; Educational, G. G. Bloom; Entertainment, E. G. Voyek; Hotel Identification, H. L. Waggener; Membership, Wm. T. McCutcheon; Plant Visitation, Dan Constant; Publicity, T. R. Corcoran; Reception and Acquaintance, Frank G. Hinkebein; Sick & Visitation, Louis A. Kirchhofer; Social, Edw. V. Bulleit; Speaker, Program, Al E. Loeffler, Jr.; Surplus Materials, B. Y. Heazlitt; Standardization, G. W. Leep.

#### FILMS SHOWN AT PORTLAND MEETINGS

Three sound films of more than usual interest, were shown at the May 19th, May 26 and June 2nd meetings of the Purchasing Agents Association of Oregon, held in the Heathman Hotel, Portland. The first of these was "With the Marines at Tarawa", presented by Staff Sergeant Roy N. Vernstrom; the next, "Steel, Man's Servant", presented with the compliments of the Columbia Steel Corporation. This film shows the manu-

(Continued on page 182)



# RIEGEL WORK GLOVES

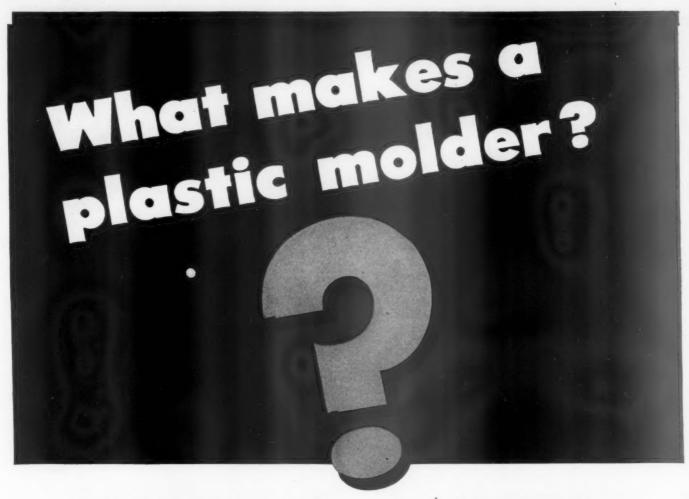
These strong, protective work gloves are the product of one of America's largest textile mills. They are Riegel-controlled — in one plant — from raw cotton to finished glove. This single close supervision of every detail results in unexcelled quality — durability — economy.

"The Right Glove For Every Job"



RIEGEL TEXTILE

342 Madison Ave., New York 17, N. Y.



Machinery? Certainly equipment is mighty important, and that's why General Industries Company has one of the finest equipped plants in the country—including presses for every type of molding, from very small to extremely large sizes.

Mold making? You can't expect to get a perfect molded part unless the pattern is perfect. That's why we prefer to make our own molds. In all modesty, we believe the ability of our mold designers and makers can't be excelled by any plant in the nation. The right molds mean accuracy, fine finish with a minimum amount of time and cost for machining or hand work.

Materials? Every molder has access to the same materials, but all do not have the knowledge required to select exactly the right material for the finished job, and to work it in the most efficient and economical manner. That's where experience counts, and we do have that experience.

Resourcefulness? Every plastic molding job we undertake is studied carefully by our engineers to see if any way can be found to improve the quality and utility of the part and reduce the cost. Frequently, from our experience we are able to accomplish all three of these objectives.

Reliability? This perhaps is the most important characteristic of all. It means deliveries on time, of the quality specified, at the price quoted, without bickering. Many customers tell us they prefer General Industries because they know we won't let them down in even the smallest particular.

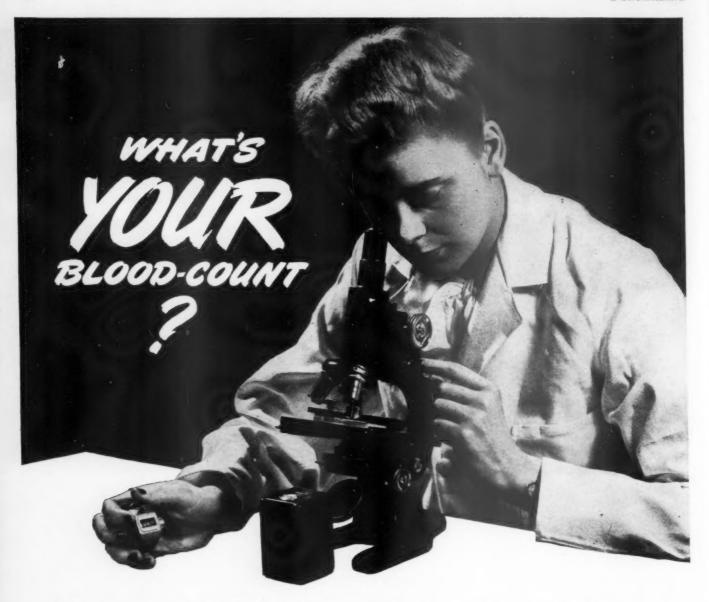
So, if you are planning postwar products which include molded plastics, we suggest you keep in touch with us. Right now, we're so full of Uncle Sam's work that we cannot take on anything additional. But when that job is finished, we'll be glad to work with you.

THE GENERAL INDUSTRIES COMPANY



Molded Plastics Division • Elyria, Ohio

Chicago: Phone Central 8431 Detroit: Phone Madison 2146 Elyria, Ohio
 Milwaukee: Phone Baly 6818
 Philadelphia: Phone Camdon 2215



Ever see a blood-count taken? The hospital laboratory technician carefully takes a drop of blood in a pipette . . . dilutes it with proper fluid . . . and, after shaking, places a drop of this mixture on a special glass slide marked off into 16 equal squares. Then, through a microscope, she begins to count the red corpuscles (or white, or both). And as her trained eye encounters one or the other, she presses the plunger of a compact counting device which she holds in her hand. There is no distraction, no need for pencil-and-paper tally. When she completes the corpuscle-count for one square on the glass slide . . . the total is all ready for her on the face of the Veeder-Root Hand Tally\* she is holding. Now she multiplies that total by a given factor . . . and that's your blood-count.

But no matter what your blood-count...or your blood-type (determined by another method)... you are now eligible as a donor, to save the lives of American fighting men. For if you are in reasonably

good health, your blood is just as good for plasma as that of a professional athlete. The giving is quick, easy, painless... and one of the most needed gifts you can make. So make yourself blood-kin to a sailor, soldier, or marine. Make a date to give your gift today.

\*(This is one of the hundreds of ways in which Veeder-Root Counting Devices...electrically, mechanically and manually operated... are used in this world at war... They are used to count everything from blood to bullets in a plane's machine guns... to the output from machines in war plants.)



#### VEEDER-ROOT INC.

Hartford 2, Connecticut

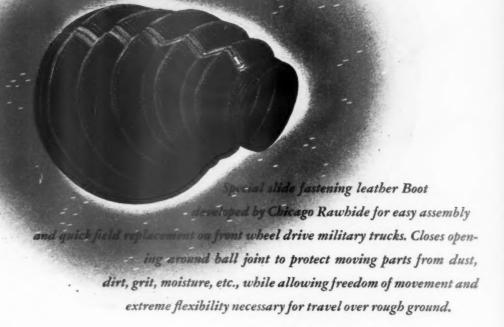
In Canada: Veeder-Root of Canada, Ltd., Montreal In England: Veeder-Root Ltd. (new address on request)

Phone NOW for an appointment at your Red Cross Blood-Donor Center

# Special assignment

Special Assignments are the orders of the day. For industry, transportation and aviation. For products of war. For our Army, Navy and Air Forces. All directed toward one goal, total and conclusive victory in the fastest possible time!

Chicago Rawhide has thrived on tough assignments for 60 odd years, creating new and improved mechanical applications for leather craftsmen, is conscientiously being directed to designing and engineering better leather products for today and tomorrow—products that most be absolutely precise and constant service-



# CHICAGO RAWHIDE MANUFACTURING CO.

Established 1878

1301 ELSTON AVENUE, CHICAGO, ILLINOIS

DETROIT • NEW YORK • PHILADELPHIA • LOS ANGELES • PITTSBURGH • BOSTON • SYRACUSE • CLEVELAND • CINCINNATI



s a result of increased efficiency developed to meet wartime demands, A rates have been reduced. Shippers nationwide are now saving an average of more than 10% on AIR EXPRESS charges. And AIR EXPRESS schedules are based on "hours", not days and weeks-with 3-mile-a-minute service direct to hundreds of U.S. cities and scores of foreign countries.

WRITE TODAY for "Vision Unlimited"—an informative booklet that will stimulate the thinking of every executive. Dept. PR-7, Railway Express Agency, 230 Park Avenue, New York 17, N. Y., or ask for it at any local office.



Phone RAILWAY EXPRESS AGENCY, AIR EXPRESS DIVISION Representing the AIRLINES of the United States

(Continued from page 178)

facture of steel from the mining of the ore, through the rolling and finishing states, and its application on various jobs. The title of the third film is "On The Air", a Westinghouse Electric & Supply Company picture which presents the past and potential development of radio broad-

### WASHINGTON (STATE) ASSOCIATION HAS 22 COMMITTEES

D. P. Brewer, new president of the Purchasing Agents Association of Washington (State), has an official working corps of 22 active committees, nine of which are headed by officers and trustees as chairmen. The committees and their chairmen are as follows, all located in

Seattle, Wash., unless otherwise shown: Membership, G. P. Locker, Metropoli-

tan Building Co.

Greeters & Reception, Trustee Henry eege, West Coast Telephone Co., Leege, West Coast Everett, Wash.

Attendance, 2nd Vice President R. Guy

Frederick, I. F. Laucks, Inc.

Past Presidents, Carroll G. Holloway, Isaacson Iron Works.

Program, 1st Vice President H. F. Price, Bethlehem Steel Co.

Magazine Advisory, National Director V. Tinker, Wm. O. McKay Co. Publicity, Earl C. White, Wash. Pur-

chasing Agent and Manufacturer.

Junior Membership, Wm. Pacific Marine Supply Co.

Entertainment, J. D. Sullivan, Rayonier,

Educational, W. D. Anderson, W. P. Fuller & Co.

Noon Luncheon-Plant Visitation, F. C.

Bergmann, Pacific Coast Co. Budget, H. J. Dobb, Schwabacher

Bros. & Co., Inc. Community Singing, Trustee Kenneth E. Cain, Washington Packers Inc., Sum-

ner, Wash. Centralized Purchasing, Silas Rich,

Board of Education. Employment, William R. Lindersmith,

Young Iron Works. Picnic, J. L. Young, Signal Oil Co. Golf, E. William Johnson, Boeing Air-

Midwinter Party, Trustee Kenneth B. Shultz, Evergreen Theaters Corp.

craft Co.

Fishing Trip, Treasurer H. Gordon Ainslee, Barde Steel Co.

Pacific Northwest Conference, Trustee M. F. McClane, Washington Co-op Egg

and Poultry Assn.

Tacoma Group, Trustee J. M. Lamb,
St. Regis Kraft Co., Tacoma, Wash.

General Discussion, S. E. Ringheim, Crown Zellerbach Corp.

# C. EDWARD THOMPSON NEW PRESIDENT READING ASSN.

C. Edward Thompson heads the Purchasing Agents Association of Reading, Pa., for the 1944-45 term. President Thompson and the following were installed at the June 12 meeting of the (Continued on page 184)

# RELIEVES, "SPLITTING" HEADACHES

Twin-Fast's relieved shank diameter minimizes danger of stresses that might cause fractures or fissures.

Twin-Fast's shank diameter is less than its thread diameter (major diameter). This eliminates the wedge action and prevents the stresses set up by the "bulky" shank of the conventional wood screw. Consequently, Twin-Fast Screws eliminate splitting of the wood—a costly "headache" in most woodworking plants. They also allow for the natural expansion and setting of the wood fibres.

What's more, Twin-Fast's relieved shank increases the holding power, because it does not push the fibres away from the threads, weakening the seating. And the process of manufacturing Twin-Fast Screws assures perfect shank uniformity—every time—a plus for fit and fastening speed. Send for Twin-Fast samples and literature today.

# OTHER TWIN-FAST FEATURES

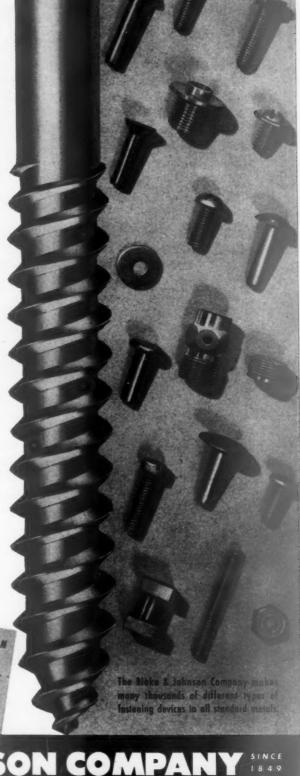
Twin, parallel threads spiral root from opposite sides, providing twice the thread pitch of ordinary screws. Driving time and costs are cut in balf!

Cylindrical construction (not tapered) increases thread area for tighter seating, greater holding power. Often, fewer and shorter screws may be used. Single, sharp, centered point where twin threads terminate assures quick starting, self-centering, balanced driving. No eccentric "crawling"—no misalignment!

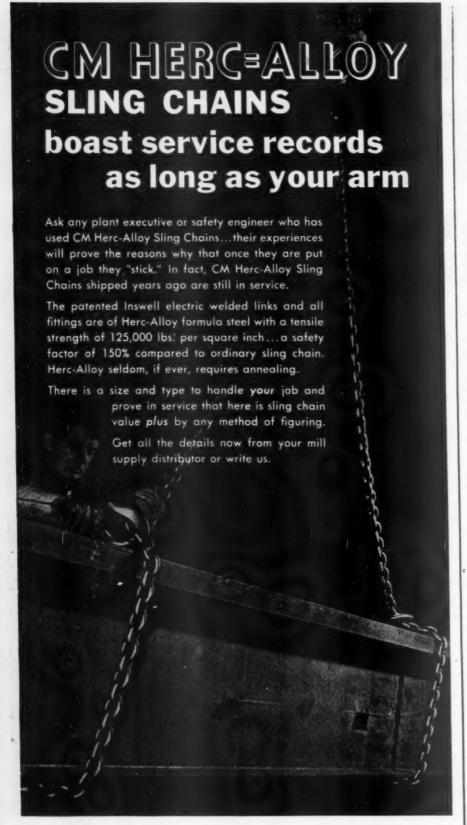
Twin-Fast Screws come in steel or brass; round, flat, or oval heads; standard sizes and thread count.

BY ALL MEANS BUY BONDS!





THE BLAKE & JOHNSON COMPANY 1849



# COLUMBUS=MCKINNON CHAIN CORPORATION

(Affiliated with Chisholm-Moore Hoist Corporation)

GENERAL OFFICES AND FACTORIES: 136 Fremont Ave., TONAWANDA, N. Y. SALES OFFICES: New York, Chicago and Cleveland

(Continued from page 182)

Association which was addressed by Stuart R. Heinritz, editor of PURCHASING Magazine on the subject of Contract Terminations and the Purchasing Agent's responsibilities in connection therewith: Vice president, Clarence G. Lukens; secretary, T. C. Flemming; treasurer, C. H. Yoder; national director, H. J. Kaufmann. E. A. Scully, Washington, Vice President 8th District, N.A.P.A., and Raymond Smith of the War Production Board were out of town guests also.

# O. PETERSEN HEADS NORTHERN CALIF. ASSN.

O. Petersen is the new president of the Purchasing Agents of Northern California; L. L. Shafer, first vice president; R. F. Hendrick, second vice president; H. M. Hitt secretary, and Robert Hayden, treasurer. Directors: H. W. Christensen, S. T. Dickey, E. M. Hughes, A. J. Melka, M. C. Nystrom, H. F. Stanley, Alex Veitch.

The association recently held its 26th annual joint meeting with the Sales Managers' association, which proved an unusually successful affair, with Captain William J. Hine, SC, USN, as principal speaker, his subject being "Purchase and Procurement of Navy Supplies in the Pacific War Area."

In addition to the annual election which was held on June 22, the following luncheon meetings were held during June: June 1, Palace Hotel, San Francisco, speaker O. C. Hansen, "San Francisco, World Trade Center"; June 6, Hotel Leamington, Oakland, "University at War", a film in sound and color produced by the University of California; June 8, Palace Hotel, San Francisco, speaker Newton H. Bell, "The Battle for Italy"; June 13, Hotel Leamington, Oakland, strictly entertainment, this being the final luncheon meeting for the fiscal year; June 15, Palace Hotel, San Francisco, Commander K. H. Donavin, "Argentina, Brazil and the United States."

# PITTSBURGH MEMBERSHIP ROSTER NOW TOTALS 245

With the addition of three new members presented at the May meeting of the Purchasing Agents Association of Pittsburgh, the membership of the association was brought to a total of 245.

The association held its Summer outing at the Highland Country Club on June 22, with golf, bridge, dinner and dancing.

# E. F. McCOLLUGH HEADS P.A.A. OF N.W. PA.

E. F. McCollough of the Pennsylvania Electric Co. was elected president of the Purchasing Agents Association of Northwestern Pennsylvania at the association's annual meeting in Bradford, Pa., June 8. Other officers elected are: T. F. Servatius, Northeastern Container Corp., vice president; Paul Broderick, Warren, Pa., secretary and treasurer, and P. L. Gedeon was named national director.

(Continued on page 187)



# When Watt asked Why, Steam went to Work



SHEETS

RODS

TUBES

FABRICATED PARTS

MOLDED-MACERATED and MOLDED-LAMINATED FORMS and PRODUCTS

STEAM jiggled the lid of many a kettle before James Watt asked why... and went on to make steam work an engine that helped touch off the Industrial Revolution.

Plastics provide similar opportunities for investigation.

Possibly you haven't used plastics for as many applications as you profitably might. Perhaps you haven't looked into plastics at all . . . but

SHEETS · RODS · TUBES · FABRICATED PARTS MOLDED-LAMINATED · MOLDED-MACERATED should. So, a suggestion: If you, with your first-hand knowledge of the properties you need in a material, will tell us what your physical, chemical, electrical, or mechanical requirements are, we will quickly see whether our type of technical plastics can help you in any of your current or future applications. Write for the complete Synthane catalog. Synthane Corporation, Oaks, Penna.



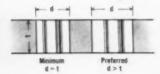
Plan your present and future products with Synthane Technical Plastics

# SUGGESTIONS ON DESIGN FOR THE USE OF SYNTHANE

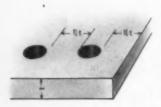
Synthane technical plastics are easy to machine by usual shop methods. However, the work of the production department can be simplified and costs and spoilage reduced by following these suggestions when designing parts:

PUNCHED OR SHAYED EDGES —Punching produces a relatively smooth edge in thicknesses up to 1/16 in. For extra smoothness, especially in thicknesses over 1/16 in., shaving should be specified.

**PUNCHED vs. DRILLED HOLES**—Tolerance can be held closer on drilled holes than on punched holes but rarely is the accuracy of a drilled hole necessary if the hole can be punched.



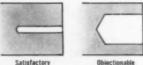
DIAMETER OF PUNCHED HOLES—The preferred ratio of hole diameter to thickness of material is not less than 1:1. That is, the diameter of a punched hole should not be less than thickness of sheet.



# DISTANCE BETWEEN PUNCHED HOLES

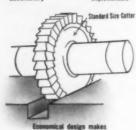
—PUNCHED HOLES NEAR EDGES

—The distance between the circumferences of punched holes or between the circumference of a punched hole and the edge of a piece should not be less than 1-1/2 times the thickness of the piece.



HOLES PARALLEL TO LAMINATIONS-

Avoid large holes parallel to laminations where subsequent pressure, as from a screw, might injure the piece.



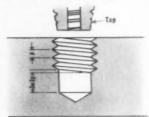
DESIGN FOR MACHINING WITH STANDARD TOOLS—Try to design parts so

that machining can be done with standard tools or cutters. Specify standard size holes and slots wherever possible to avoid special tooling.

**TOLERANCES**—Give careful consideration to tolerances. It is poor economy to specify closer tolerances than are actually needed. As a matter of fact, laminated plastics cannot be held to tolerances such as .000"—.0005". The minimum tolerance advisable on dimensions

under 1/2 in. is a total of .002". This tolerance is the absolute minimum and all parts should be designed with greater tolerances if possible.

**TAPPING TOLERANCES** — Tapping should not be specified closer than a Class 2 fit with 65 to 70% of thread. Additional thread depth would add very little strength at the risk of breaking threads.

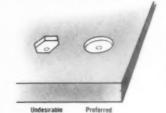


TAPPING IN A BLIND HOLE — When tapping in a blind hole, allow a depth of several threads from the bottom of the hole to first full thread for clearance.



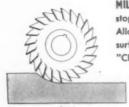
AVOID IRREGULARLY SHAPED HOLES
—Eliminate, wherever possible,

—Eliminate, wherever possible, irregularly shaped holes unless the thickness of the piece permits punching. Irregularly shaped holes on thicker sections can be made, but special tools are required.

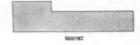


IRREGULAR COUNTER BORES AND RE-

CESSES—Eliminate entirely all irregular counter bores and recesses (except round).



MILLED SLOT WITH SQUARE CORNERS — Avoid stopping a milled slot with square corners. Allow the bottom of the slot to emerge to the surface with the natural contour of the cutter. "Climb" milling is recommended.



MARKING PARTS—Most parts can be marked with a punch, engraved or printed by the Synthographic process. The thinnest of materials can be printed.

FORCED FITS—The close tolerances required for forced fits in metal are not at all necessary in Synthane. Males can be as much as .005° oversize.

PLAN YORG PRESENT AND PUTURE PROBECTS WITH SYNTHAME TECHNICAL PLASTICS



HEETS-RODS-TUBES-FABRICATES PARTS-MOLDED-LAMPRATED-MOLDED-MAGERAYEN

SYNTHANE CORPORATION, OAKS, PENNA.

REPRESENTATIVES IN ALL PRINCIPAL CITIES

(Continued from page 184)

### NATIONAL CONVENTION HIGHLIGHTS AT SEATTLE

President Dick P. Brewer presided at the June 15 meeting of the Purchasing Agents Association of Washington, which was held at the Washington Athletic Club in Seattle. Featured on the program were the following:

Worth McClure, Superintendent of Seattle Public Schools spoke on "Business Operations of War Time Britain." Harold R. Morrison, Northwest District Purchasing Agent, Union Oil Company of California, gave an interesting talk on "Pacific Northwest Petroleum Outlook.

"New York War Conference Highlights" were given by the following delegates to the National Convention recently held in New York: D. P. Brewer, Trumbull Electric Manufacturing Co.; George S. Drury, Northwest Lead Co.; Chas. V. Tinker, Wm. O. McKay Co.; Oakley W. Dexter, Crown Zellerbach Co.; C. G. Holloway, Isaacson Iron Works; H. D. Van Eaton, State of Washington, Olympia: and Earl C. White. Washington Purchasing Agent and Manufacturer.

A fourth feature of the meeting was a description of U. S. Coast Guard Activities and the showing of a war moving

picture "Tank Force"

The dinner meeting was preceded by "Priorities Up-to-Date Forum", with John S. Robinson as Chairman, and Carl C. Nissler, consultant, Seattle office of the War Production Board as Counsellor.

# WILLIAM F. RAYMENT HEADS RHODE ISLAND ASSN.

Following are the new officers of the Rhode Island Purchasing Agents Association, elected at the annual meeting which was held at the Pawtucket Golf Club May 23:

President, William F. Rayment, New

England Brass Co.

First Vice President, Franklyn A. Adams, State of Rhode Island.

Second Vice president, Charles T. Wass.

Secretary-Treasurer, Arnot Hirst. National Director, Everett A. Taylor, Providence Gas Company.

Directors: Clarence E. Conkey, John S. Dickson, James G. Gunderson and Thomas W. Seaver.

Travel movies in technicolor were shown with the compliments of the Colonial Beacon Oil Company.

# RAYMOND W. BRICK HEADS MILWAUKEE ASSOCIATION

Raymond W. Brick, Carnation Company, Oconomowoc, Wis., is the new president of the Milwaukee Association of Purchasing Agents for the 1944-45 term. Other new officers are as follows:

Vice President, Lyall C. Stilp, Kimberly Clark Corporation, Neenah, Wis. Secretary, Edward L. Block, Unit Drop Forge Division of Fuller Mfg. Co., Milwaukee.

Treasurer, Clifford H. Dawley, Amp-(Continued on page 188)

NORTON ABRASIVES



# METALITE CLOTH SLOTTED DISCS

3/8 to 6 inch diameters

# Speed War Jobs

(Upper Illustration)

This 2-Bore Aluminum Throttle Body has a finished bore. There was slippage with hand scrapers. Two 11/2" unslotted Metalite discs, grit #60, back to back, were used. This method proved twice as fast as the former hand scraping.

(Lower Illustration)

In this illustration 5" Slotted Discs, grit #100, are used to put 1/16" radius on the edges of Magnesium 3-Bore these Throttle Bodies. This method saved tooling and additional machines. Time for the 3 bores is .68 of a minute.

These SLOTTED DISCS, in almost endless sizes and grits, are but one of many Metalite Cloth "Gadgets" ready for instant use on power tools. A few others illustrated below. We'll gladly help you select the proper "Gadgets" for improving a wide variety of your own sanding and finishing operations. Write us.

BEHR-MANNING (DIVISION OF NORTON COMPANY) TROY, N. Y.

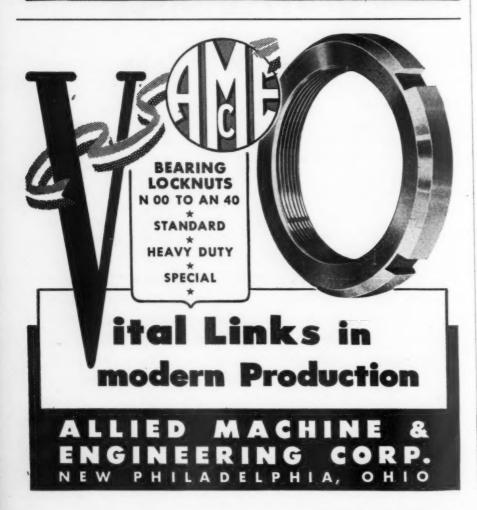


Ju



The metal to be used in a particular Jelliff basket is determined by the cleaning and pickling cycle. It is obviously impossible to lay down any hard and fast rules, due to the wide variance in such influencing factors as construction of parts, character and strength of solution, methods of handling, temperature, possible galvanic action, etc. If you supply us with these essential facts, we will recommend the basket best suited to your needs.

The C.O. JELLIFF MFG. CORP. 22 PEQUOT AVENUE - SOUTHPORT, CONN.



(Continued from page 187)

co Metal, Inc., Milwaukee.

National Director, Loy M. Sanford, Motor Castings Co., Milwaukee.

Local Director (1948) Fred Syburg, Chain Belt Co., Milwaukee.

The annual meeting was at the Tuckaway Country Club, and in addition to the annual election, featured an afternoon and evening of golf and entertainment.

# 1 1 1 COMMITTEE CHAIRMEN APPOINTED AT WASHINGTON

New officers of the Purchasing Agents Association of Washington D. C. for the next year were inducted into office at the June 13 meeting in the Mayflower Hotel. They are J. P. Kurtz, Jr., Director of Procurement, Pennsylvania-Central Airlines Corp., president; A. Russell Miller, Purchasing Agent, Schuttig & Co., vice president; Currant Ridout, Purchasing Officer, Treasury Procurement, Secretary-Treasurer. Retiring President, Clifton E. Mack, Director of Procurement, Treasury Department, was presented with a NAPA lapel pin. He now is national director.

The following committee chairmen were appointed: Membership, Curran Ridout; Public Relations, Clifton E. Mack; Program and Entertainment, C. Warner McVicar; Attendance, A. Russell Miller.

Announcement was made by that James Knox, a member of the association, had received an appointment to lecture at the School of Business Administration, Harvard University, on various phases of the war program. The industrial moving picture "The Formica Story" was shown and proved of general interest.

The Association decided not to adjourn during the summer months. Meetings will be held in July, August and September at the discretion of the Board of Directors and the Executive Committee.

# BERRY REELECTED PRESIDENT OF METROPOLITAN CLUB

Clarence H. Berry, Prudential Insurance Co., was reelected president of the Metropolitan Purchasers' Assistants Club, New York, at its stated annual meeting which was held June 13 at the Iceland Restaurant, New York City. Thomas H. Masters, Worthington Pump & Machinery Corp. was made vice president; George P. McShane, secretary, and Kenneth M. Reed, Mutual Benefit Life Insurance Company, treasurer. B. A. Westa, Jr., N. Y. & N. J. Lubricant Company remains as chairman of the executive board.

# 7 7 7 POSTWAR PLANS FOR PUBLIC WORKS—NORTH JERSEY

Forty members of the North Jersey Purchasing Agents Luncheon Club, Newark, N. J., heard Harry W. Alexander, resident planner commissioned by the city to make a survey of needed public improvements, discuss post war plans for

(Continued on page 192)

From steel making to rope laying...we never forget this fact...that pound for pound, wire rope has more bearing surface than any other piece of equipment.

That's why you can depend on ... ROEBLING "Blue Center" Internal Bearings STEEL WIRE ROPE WHAT can you expect from Roebling? Rope that has known capacity to deliver service. Engineering, in our plant and at your job, to put the rope to work right. Maintenance practices that protect its long life. Your postwar profits and



postwar jobs will depend in part on operating rope-rigged equipment at lowest cost. You can leave that part to Roebling.

JOHN A. ROEBLING'S SONS COMPANY

TRENTON 2. NEW JERSEY

Branches and Warehouses in Principal Cities

Wire Rope and Strand . Fittings . Cold Rolled Strip . Aircord, Swaged Terminals and Assemblies • Round and Shaped Wire Wire Cloth and Netting . High and Low Carbon Acid, and Basic Open Hearth Steels Suspension Bridges and Cables . Electrical Wires and Cables . Aerial Wire Rope Systems

PACEMAKER IN WIRE PRODUCTS

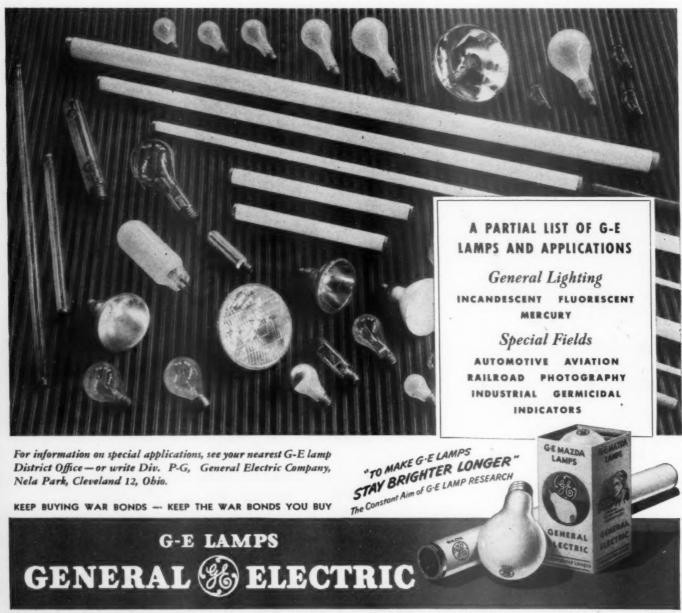
# HOW TO MEET EVERY LIGHTING NEED

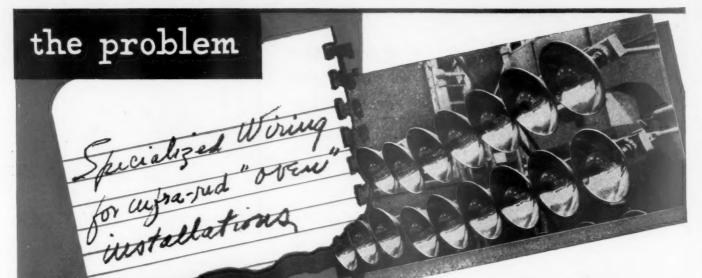
# WITH GENERAL ELECTRIC LAMPS

TAKE these two simple steps for best lighting results: (1) Select the type of lamp that fits the job. (2) Be sure it's a G-E lamp—look for the G-E trademark on every lamp.

Whatever your individual lighting problem, there's a General Electric lamp that can solve it. Fact is, you may never need a surgical lamp... or a railroad head-

lamp... or a big 10,000 watt airport floodlight... but G-E makes them, just as they make all the lamps for every type of lighting service. Operating efficiency and dependable service are assured—the practical result of more than 480 tests and inspections that safeguard the uniform high quality of G-E lamps... lamps that are made to stay brighter longer.



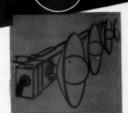


the answer

WIREMOLD WIRING

113000" 543II









VIEW FROM REAR

Photograph and drawings show a typical use of Wiremold No. 3000 Channel and fittings in assembly of near-infra-red lamp units. Structurally strong and rigid, Wiremold here provides a simple means of mounting lamps in any desired number and grouping. The No. 3000 Ccover as hole-cut for eisher standard sign receptacles or outlet how receptacles. Wiremold adjustable ratchet hangers (3008 F) permit necessary adjustment in the banks. Wiring is safely enclosed and protected with channels.

We present this as a specific example of the many hundreds of different ways in which Wiremold is today helping industry gain efficiency while saving time and expense in meeting specialized wiring and lighting needs.

Send for new Industrial Wiring Bulletins and engineering data sheets.

WIREMOLD CAN HELP YOU PRODUCE FOR WAR...
WHILE YOU PLAN FOR PEACE!

WIREMOLD

AND YOU KNOW THE ANSWERS



THE WIREMOLD COMPANY HARTFORD 10, CONN.





OHESIVE TAPES COMMINING SKINS BACKED ACKING CLOTHS COATING AMINATING 

CHICAGO, ILL. H. Rabin, 30 No. LaSalle St. LOS ANGELES, CAL. PETERSBURG, VA. A Bregg, 224 No. Sycamore St. PORTLAND, ORE. Boyd Co., S. E. Union & Morrison SAN FRANCISCO, CAL.
A, B. Boyd Co., 1235 Howard St.
SEATILE, WASH.
A. B. Boyd Co., 404 Daster Ave.
ST. LOUIS, MO.
C. E. Wilkins, 1492 Locust St. WALLASTON, MASS. S. B. Scott, 123 Elm St CAPE TOWN, S. A. n Agency Co., 12 Plain St.

# COATING LAMINATING QUICK SERVICE

A DHESIVE and chemical mix coatings expertly applied to paper, cloth, foils and other materials.

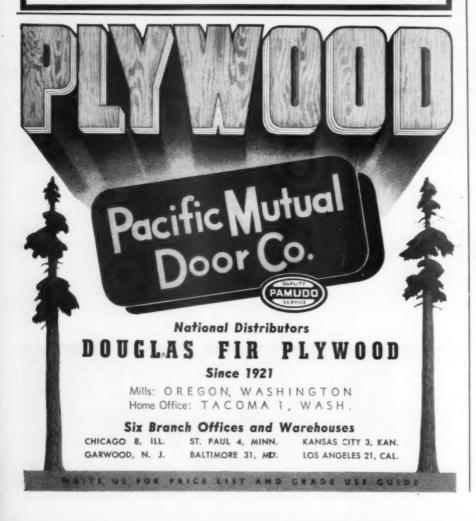
Fabrics backed, laminated or combined to your specifications, and special purpose formulas developed in our own Laboratory.

65 years of "Know-How" deliver "Use-Proved" tapes and backings deserving the enthusiastic approval they earn on the production lines.

Just tell us what your problem is and let our Laboratory, backed by their years of specialized experience in synthetics, help you find the perfect solution.

Let Mr. George L. Peters, E.M., Columbia 1911, head of our Engineering Staff, suggest from our formulas those experience indicates as best suited to your particular

161 1614 ST. Brooklyn, N.Y. ESTABLISHED 3 GENERATIONS



(Continued from page 188)

public works in the city of Newark. The Speaker for the June 8 meeting of the Club was Walter E. Cummin, National Director, who spoke on highlights of the N.A.P.A. convention at the Waldorf-Astoria Hotel in New York.

# W. E. RIER HEADS MEMPHIS ASSOCIATION

W. E. Rier, Rotary Lift Co., was elected president of the Memphis Association of Purchasing Agents, at the May dinner meeting held in the Hotel Gayoso. Mr. Rier has served as temporary president since the first of the year. Other officers elected are:

Vice President, Newton C. Wilson, Riechman- Crosby Co.

Secretary, Raymond P. Durick, Memphis National Gas Co.

Treasurer, George Nelson, Ford Motor

Directors: James Pidgeon, Pidgeon-Thomas Iron Co., and U. M. Finch, City of Memphis.

E. M. Almy, National Fireworks Co., program chairman, presented two educational war pictures entitled "Kill or be Killed" and Communique No. 2." The Memphis Association will continue to hold meetings during the summer months.

### TALK ON PLASTCS AT EASTERN NEW YORK MEETING

D. S. McKenzie of General Electric Plastics Division, Pittsfield, Mass., gave an authoritative review of the borader applications and more extensive uses of plastics after the war, at the May 18 meeting of the Purchasing Agents Association of Eastern New York, which was held at the Mohawk Golf Club, Schen-

### MAX HENSICK MADE PRESIDENT OF GRAND RAPIDS ASSN.

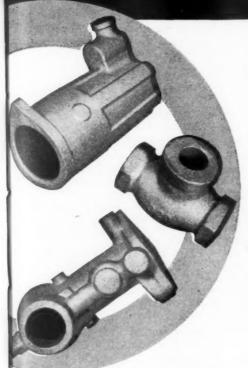
Max Hensick was elected president of the Grand Rapids (Mich.) Purchasing Agents Association at the annual Meeting held in the Rowe Hotel May 16. Other officers elected are: Vice president, Ira W. Jackson; treasurer, Stanley T. Cook; secretary, Gardner G. Willard; director, William N. Ferguson; members of the executive committee: George J. Rooney, Robert Newton and Harold Herrington. 1 1 1

### BRITISH COLUMBIA ASSOCIATION **ELECTS NEW OFFICERS**

A. O. Scott, Canadian Fishing Co., Ltd., Vancouver, B. C., is the new president of the Purchasing Agents Association of British Columbia. L. F. C. Kirby, Vancouver General Hospital is vice president; Wm. Letham, Imperial Oil, Ltd., secretary; and J. W. Robinson, (Continued on page 194)



# If you can't get brass or bronze ...



# Use castings of EATON PERMANENT MOLD IRON! They give you four advantages!

Eaton has perfected an exclusive Permanent Mold machine method for the mass production of Iron Castings. Eaton Permanent Mold Iron—tested in numerous conversion applications over the last 10 years—offers you four important advantages:

- 1. PERMANENT MOLD IRON has a fine-grained homogeneous structure a factor that makes it absolutely free of porosity.
- 2. PERMANENT MOLD IRON compares favorably with Brass and Bronze in machinability, can be worked with little change in present machine tool setup.
- PERMANENT MOLD IRON is a lower base cost material.
- 4. PERMANENT MOLD IRON CAST-INGS can be produced in complex, cored designs or simple shapes with accuracy and uniformity, by this patented EATON PERMANENT MOLD PROCESS.

Before brass and bronze shortages leave you high and dry, let us tell you more about Eaton Permanent Mold Iron.

EATON

EATON MANUFACTURING COMPANY
Foundry Division

9771 FRENCH ROAD . DETROIT, MICHIGAN



been no compromise with Starrett standards of precision and workmanship, nor will there be, come what may.

The Starrett name on a precision tool carries greater significance than ever in the minds and hands of America's vast army of production.



Now with Service Star

THE L. S. STARRETT CO. \* ATHOL \* MASSACHUSETTS \* U.S.A.

World's Greatest Toolmakers

# STARRETT

PRECISION TOOLS . DIAL INDICATORS . GROUND FLAT STOCK HACKSAWS . METAL CUTTING BANDSAWS .

(Continued from page 192) American Can Co., Ltd., treasurer. Walter N. McPhee, Kelly Douglas & Co., Ltd., is National Director.

### CALVIN H. MARCUS HEADS LOUISVILLE ASSOCIATION

Calvin H. Marcus, Edward H. Marcus Paint Co., Louisville, Ky., was named president of the Purchasing Agents association of Louisville at its May meeting. Other officers elected are:

First Vice President, A. E. Loeffler. Second Vice President, H. L. Waggener.

Treasurer, C. E. Dunn. Secretary, Robert L. Schmitt. Assistant Secretary, P. J. Martersteck. Directors: Malcolm Mason, William Kerrick and T. A. Corcoran.

# GORDON T. HANSON HEADS OREGON ASSOCIATION

The following panel of officers was elected at the annual meeting of the Purchasing Agents Association of Oregon:

President, Gordon T. Hanson, Stimson Lumber Co., Forest Grove, Ore.

Vice President, O. K. Buckner, Electric Steel Fdry. Co., Portland, Ore. Secretary, C. B. Amos, Bingham Pump

Co., Portland, Ore.

Treasurer, W. F. Gorrell, Munnell & Sherrill, Portland, Ore.

National Director, Matt Pouttu, Oregon Culvert & Pipe Co., Portland.

Executive Committee: A. W. Angell, Northwestern Electric Co., Portland; L. V. Guild, Union Pacific Railroad Co., Portland, and W. W. McCulloch & Sons, Portland.

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### A. R. LAMA HEADS LOS ANGELES ASSOCIATION

New officers of the Purchasing Agents Association of Los Angeles, Calif., for the coming year are as follows:

President, A. R. Lama, Arrowhead & Puritas Waters, Inc.

First Vice President, Gerald A. Selby,

Los Angeles Chemical Co. Second Vice President, L. T. Bleasdale,

Zellerbach Paper Co.
Secretary, Dean L. Fish, University of Southern California.

National Director, Charles A. Keeble, Union Pacific Railroad.

### CLAUDE WHEAT HEADS **UTAH ASSOCIATION**

Claude Wheat, Mountain Fuel Supply Co., Salt Lake City, Utah, was elected president of the Purchasing Agents Association of Utah, at the annual meeting in May. Other ocers elected are: Vice president, R. J. Close, Tribune-Telegram; secretary, C. T. Rich, Western Paper Products Co.; treasurer, F. G. Burton, Grante School District; national (Continued on page 196)



Successful welding of Stainless Steel depends on (1) the type and characteristics of the steel to be welded, (2) the suitability of the electrodes used, and (3) the skill and knowledge of the welder.

The first two factors are constant because the production of stainless steel, today, has reached a high state of perfection and . . . there is a type of McKAY STAINLESS STEEL WELDING ELECTRODE, with exactly correct characteristics, for every stainless welding need.

The skill and knowledge of the welder, therefore, is of paramount importance! The more technical "know how" you have, the better.

Can you answer the questions, listed at the right, correctly . . . and give the reasons for your answers? These and similar questions are discussed in a booklet soon to be released by the McKAY COMPANY. It will contain, as well, other data useful to every welder. It's free. Reserve your copy today by writing for "Things to Know About Welding Stainless Steel."

# DO YOU KNOW THE ANSWERS?

Test your knowledge with these 3 brain teasers. Then check the accuracy of your opinion by referring to the correct answers below. Space does not permit publication of the "reasons why" but full explanation may be found in the forthcoming McKAY booklet, "Things to Know About Weiding Stainless Steel." Reserve your copy now . . and watch for additional questions and answers in subsequent ads.

TRUE FALSE

- 1. All Stainless Electrodes regardless of their manufacturing source or analyses, are coated with one or the other of two fundamental types of coating.
- 2. Compared with ordinary steels, Stainless Steels of the Chrome-Nickel type conduct heat about one-half as rapidly
- 3. Proper annealing practice for Chrome-Nickel Steels requires holding at 1900°F, for one hour for every inch of thick-

eslad (.5) frue (2.) frue (3.) False



General Sales Office: York, Penna.

THE TOTAL PITTS BURG

WELDING ELECTRODES . . . COMMERCIAL CHAINS . . . TIRE CHAINS



You can get bearing overlays of AMPCO METAL economically . . . with



Heavy-duty bearing surfaces — in heavy machinery, ordnance, pumps and valves, and a long list of similar applications — last several times as long, when overlaid with Ampco Metal—the superior alloy of the aluminum bronze class.

Worn bearing surfaces on old equipment can be rebuilt quickly and economically by maintenance crews.

Ampco-Trode coated welding electrodes deposit weld metal comparable in strength, ductility, and bearing qualities with the various grades of cast Ampco Metal. This deposit can be applied to the cheaper base metals, giving a more durable finished part at lower cost.

Let an Ampco field engineer help you redesign, for lower costs and better-satisfied customers.

Write for free bulletins.

### Leveling pistons for giant shovel overlaid with Ampco-Trode

This 2,800,000 lb. stripper, designed and built by Bucyrus-Erie Company, has an automatic leveling mechanism operated by a hydraulic jack at each corner of the base. At one end of each piston in this hydraulic jack, 16 sq. ft. of steel bearing surface is overlaid with Ampco-Trode Grade 18 by metallic-arc welding . . . for maximum wear-resistance.

# Ampco Metallurgical Specialties

Ampco Grades 12 to 22 (special alloys of the aluminum bronze class) . . Ampcoloy (general industrial bronzes) . . . Special Custom Copper-base Alloys.

Sand Castings . . . Centrifugal Castings Extruded and other Wrought Products . . . . Ampco Non-Sparking Safety Tools.



Ampco-Metal, Inc.

Tear out and mail coupon today.

AMPCO METAL, INC., Dept. P-7 Milwaukee 4, Wisconsin

Please send Engineering Data Sheet No. 99 and other information on Ampco-Trode overlays.

Name	Position
Company	
Address	
01	

(Continued from page 194)

director, H. P. Hopkinson, Utah Poultry Producers Cooperative Association.

# WALTER BELL HEADS FORT WORTH ASSN.

New officers of the Purchasing Agents Association of Fort Worth, Texas, for the current year, are as follows: Walter Bell, president; E. T. Bagaley, first vice president; W. A. Blessing, second vice president; S. J. Johnston, secretary; directors, W. A. Blessing and H. C. Jones.

### HOLD PRE-SUMMER DANCE AT CINCINNATI

The Cincinnati Association of Purchasing Agents held a pre-summer dance the night of June, 3 at the Clovernook Country Club, which the members found to be a delightful way to spend an evening.

# DISCUSS SALVAGE AT KALAMAZOO MEETING

Roy Whittal, representative of the War Production Board, talked on the subject of "Salvage and Its Relation to the War Effort" at the May 25 meeting of the Kalamazoo Purchasing Agents Association, held in the Columbia Hotel, Kalamazoo. Mr. Whittall accompanied his talk with a moving picture on salvage activities.

### EMIL SCHACHT HEADS OMAHA ASSOCIATION

The following officers for the 1944-45 term were installed at the May meeting of the Purchasing Agents Association of Omaha, Nebr., which was held in the Castle Hotel, Omaha: President, Emil Schacht; vice president, Paul Pounds; secretary-treasurer, Marvin Reifschneider; directors, H. F. Janssen and Frank Welty.

# A. C. UNGER HEADS INLAND EMPIRE ASSN.

Ashton C. Unger, Zellerbach Paper Co., was elected president of the Inland Empire Purchasing Agents Association, Tacoma, Wash. Charles Aspinwall, Aluminum Company of America Reduction Plant is vice president, and Roy Gaucher, Shell Oil Co., is secretary-treasurer.

# ALFRED H. SCHULTZ JR. HEADS BALTIMORE ASSOCIATION

Alfred H. Schultz, Jr., Revere Copper & Brass, Inc., was installed as president of the Baltimore Association of Purchasing Agents at the June meeting. Other officers installed are:

Vice-President, Lester H. Palmer, Kopper Company, American Hammered Ring Division.

(Continued on page 200)

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Conversely, a dependable motor enhances the value of an appliance. Leland motors are synonymous with dependability and are widely used by appliance builders on

STOKERS. FANS PUMPS

UNIT HEATERS BLOWERS COMPRESSORS

AND FOR OPERATION OF MACHINE TOOL CONTROLS

CONSULT LELAND ON MOTORS FOR POST-WAR APPLIANCES.

THE LELAND ELECTRIC CO. DAYTON 1, OHIO

The Leland line includes motors, generators, motor generator sets, inverters and volt-

CREATIVE ELECTRICAL ENGINEERING

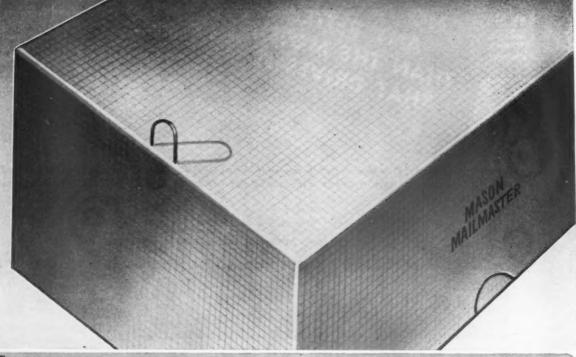
BUY WAR BONDS TO BACK THE ATTACK

age regulators.



# No Wrapping or Tying WHEN YOU LISE

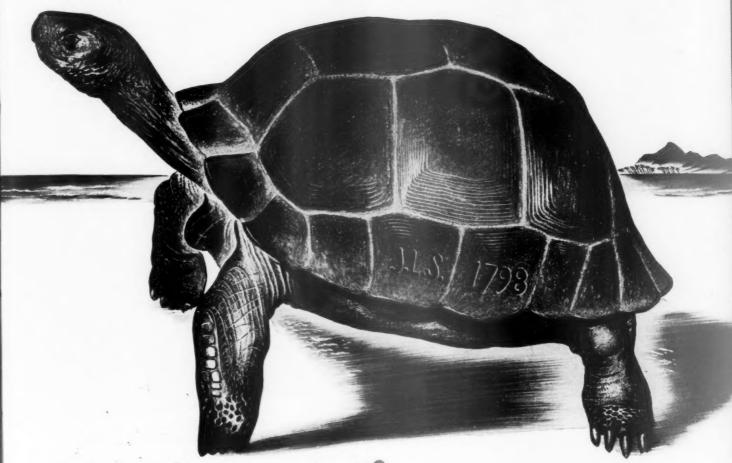
WHEN YOU USE A MAILMASTER



The MASUN BUX CUMPANY

ATTLEBORO FALLS, MASS. - 175 5TH. AVE., NEW YORK

# That Tough Steel



When whaling in the South Pacific was profitable many a harpooner left his card for future generations to find carved on the shell of an ageless tortoise.

For Long Life with Economy Specify "UNIVAN" That Tough Steel

BUY MORE WAR BONDS AND STAMPS

"Old Tuffy" and his many relatives reckon time, not in years, but centuries. And these rugged creatures have much in common with "UNIVAN"that tough alloy steel we use in fabricastings which stand up under severe shocks and stresses with notable lack of fatigue for far longer than is expected. If the design is intricate and the requirements rigid take advantage of Union's long experience in heat-treated castings of "UNIVAN"-that tough steel.

# UNION STEEL CASTINGS BLAW-KNOX CO.

MAKERS OF Driving Wheel Centers, Locomotive Frames, Pump Casings, Vault Doors and Frames, Annealing Boxes, Spindles, Coupling Boxes, Open Hearth Charging Boxes, Gear Blanks — and other Castings for Steel Mills and General Industry.

JU



"Why is Emil making with the beaver?"

"Oh, he's paying off a bet. He said he wouldn't shave until that Armour Disc wore out!"

ALL kidding aside, you can't buy a longer-lasting cutting tool than an Armour Fibre Combination Grinding Disc. It's built for wear! For that extra hard, extra sharp aluminum oxide abrasive is firmly welded to the cloth and fibre backing with a vise-like Armour glue . . . made especially for that purpose.

It's easy to work with, too . . . cuts faster, sharper, cooler. And because the aluminum oxide is uniformly

spaced and sized, you get the greatest abrasive effect possible from every square inch of disc.

This top-performing grinding disc is only one of a complete line of Armour abrasives built to rigid quality specifications. There are belts, cones, sheets, bands and other more specialized shapes. Whatever your abrasive problem, there's an Armour product that will solve it efficiently and economically.

# Armour Sandpaper Works

DIVISION OF ARMOUR AND COMPANY 1355 West 31st Street, Chicago 9, Illinois



(Continued from page 196)

Treasurer, Wm. J. Young, Baugh Chemical Co.

Secretary, Anthony J. Peroutka, Federal Reserve Bank.

National Director, J. Herbert Gaston, Baltimore City Purchasing Agent. Alternate National Director, L. I.

Whiteford, Maryland Glass Corporation. Wm. R. DeGrafft of the J. S. Young Company was made a member of the executive comittee.

# DISCUSS SYNTHETIC RUBBER PRODUCTS AT LOS ANGELES

George L. Froom, western representative of the Electric Hose & Rubber Co., Wilmington, Del., was guest speaker at the May 25th noon luncheon meeting of the Purchasing Agents Association of Los Angeles, his subject being synthetic rubber and synthetic rubber products.

# R. K. WARD HEADS KANSAS CITY ASSOCIATION

R. K. Ward is the president of Purchasing Agents Association of Kansas City, Mo., for the 1944-45 term. H. J. Hodes and G. E. Spencer are the new vice presidents; R. C. Hopkins, secretary; Mathias Shields, treasurer, and R. A. Graves, national director.

# REDISTRIBUTION ACTIVITIES OF WPB AT BIRMINGHAM

James W. Rick, Redistribution Manager of the Birmingham, Ala. W.P.B. office, spoke on "Redistribution Activities of the War Production Board", at the May meeting of the Purchasing Agents Association of Birmingham.

# CONTRACT TERMINATIONS AT PITTSBURGH MEETING

Charles R. Fay, secretary, Policy Committee, Westinghouse Electric & Manufacturing Co., Pittsburgh Pa., talked on contract terminations and cancellations at the May meeting of the Purchasing Agents Association of Pittsburgh, which was held in the Hotel William Penn.

# GEORGE J. REES CHAIRMAN OF CLEVELAND EAST END ASSN.

George J. Rees, Di-Noc Manufacturing Co., Cleveland, Ohio, is chairman of the East End Purchasing Agents Group for the current year; O. O. McKibben, buyer, Eaton Manufacturing Co. is vice chairman, and Lloyd F. Rice, Sanymetal Manufacturing Company is secretary-treasurer.

# HEAR TALK ON ELECTRONICS AT WILMINGTON

George R. Proutt, manager of the Industrial Control Division of General

(Continued on page 202)

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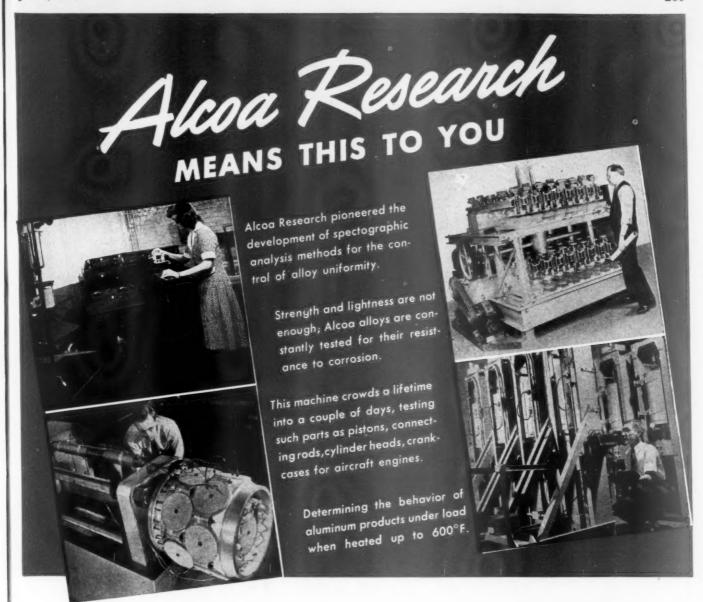
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Research carried on by the staff of Aluminum Company of America has won world recognition. Its effect is fundamental and far-reaching.

For example, the manufacturer who buys Alcoa Aluminum products, to include in the devices or equipment he is making, buys more than aluminum castings, forgings, sheet or shapes. Alcoa research helps him determine what alloys will best enable him to meet such requirements as weight saving, corrosion resistance, strength and heat transfer.

In addition to the careful research done on alloys, Alcoa service goes further. The designs of parts to be made in Alcoa Aluminum are checked for the best method of manufacture. most efficient use of aluminum, and highest possible service characteristics. Parts are produced under close laboratory control, by a manufacturing and research organization whose guiding principle is the constant improvement of Alcoa's output. The performance of each product, as it ultimately affects you, is thereby improved.

These services are hastening the winning of the war by aiding manufacturers of wartime products. They will have an important effect, too, on designers, builders and users of peacetime products. Aluminum Company of America, 1931 Gulf Building, Pittsburgh 19, Pennsylvania.



ALCOA ALUMINUM



"The Blade in the Plaid Box"

AMERICAN SAW & MFG. CO., SPRINGFIELD 1, MASS., U. S. A.



(Continued from page 200)
Electric Company, addressed the Industrial Purchasing Agents Group of Wilmington, Del. on "Electronics—Postwar Use and Application", at meeting in the Hotel DuPont May 26.

# NAVY RELEASES FOUR TIMELY FILMS

Four new motion picture shorts, produced by the Industrial Incentives Division, U. S. Navy, are now available for showings to war plants; namely:

Behind Nazi Guns, (20 min., 16 or 35 mm.) The inside story of Germany's industrial war power today. Through captured enemy film and other footage, it reveals working conditions in much-bombed Germany.

The Battle Against Ship 13, (15 mins., 16 or 35 mm). Story about American boy who leaves war job to become a Navy aerial gunner, with exciting, unexpected climax.

Your Ship In Action, (10 mins., 16 mm. only). In Kodachrome. The saga of a fighting ship from the time of its launching to its first baptism of fire.

For Distinguished Service, (18 mins., 16 or 35 mm.) Particularly for showing in the petroleum industry, this picture shows the pipe lines of victory extending from the "cat crackers" to the battle zones.

For further information about these films, write to Chief of Industrial Incentive Division, Navy Department, 2118 Massachusetts Ave., N. W., Washington, D. C.

# STORY OF LAMINATED PLASTICS SHOWN IN COLOR FILM

A 5-reel motion picture in color produced for The Formica Insulation Co., Cincinnati, Ohio, depicts the processes involved in the manufacture of laminated plastics for industrial, aircraft, and decorative and other uses, together with applications of the product and anticipated new uses in the post-war era. The picture is accompanied by narration.

# MOTION PICTURES ON SYNTHETIC RUBBER

Filmed inside one of the nation's newest plants for making synthetic rubber, the Goodyear Tire & Rubber Co., Akron, Ohio, has completed a motion picture which is believed to be one of the most accurate and at the same time, most easily understood motion pictures on this vital war material. One version of the film was made for release through the Bureau of Mines film library in Pittsburgh, Pa., and the other for release through Goodyear's motion picture department in Akron, Ohio. Copies for private or public showings are available through all of the company's branch offices and its mechanical goods field representatives. The film deals with the two principal types of synthetic rubber being produced today for America's war needs, GR-S and GR-N, (Continued on page 204)

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NO. 841 FIBRATED LEATHER-for sealing oil, water, or gasoline at temperatures up to 300° F. Made with live leather fibers, this extra-resilient material is excellent for both ordinary and heavy-duty jobs. It's tough, uniform, and stable. ARMSTRONG'S FIBER SHEET NO. 743 NONCORROSIVE—developed PACKING especially for use with alloys of aluminum, magnesium, steel, zinc, or copper. It does not corrode these metals even MATERIALS in the presence of moisture or salt water. Other properties equal those of No. 841. NO. 1242 GENERAL-PURPOSE-a lowcost gasket material for sealing oil, gasoline, or water under ordinary conditions. It provides an economical, sure seal in applications where the superior qualities of No. 841 are not required.

# FREE FOLDER CONTAINS SAMPLES

ARMSTRONG'S Fiber Sheet Packings are available in diecut gaskets, sheets, and rolls. For information about sizes and thicknesses, and for samples, write for Armstrong's new folder, "Fiber Sheet Packing Materials." Armstrong Cork Company, Industrial Division, 7207 Arch St., Lancaster, Pa.

All three Armstrong's Fiber Sheet Packings meet these specifications: Federal E-HH-P96a; U. S. Navy 33 P 22b; Underwriters' Laboratories, Inc. (for sealing hazardous liquids).

### **Armstrong's Industrial Products**

GASKETS, PACKINGS, SEALS, and MECHANICAL SPECIALTIES of Cork, Synthetic Rubber Compositions, Cork-and-Synthetic-Rubber Compositions, Cork-and-Rubber Compositions, Fiber-Type Materials, and Rag Felt Papers

RESILIENT SURFACINGS (for desks, counters, etc.) and FLOORINGS (for buses, railway cars, etc.) of Linoleum, Linowall, Linotile (Oil-Bonded), Airoflor, Armoflor, Asphalt Tile, Automat, Cork Tile, Monowall, and Traffex

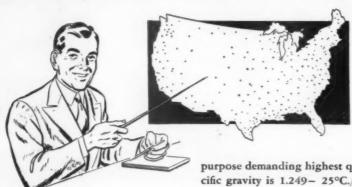
TEXTILE MILL SUPPLIES - SHOE MATERIALS
ADHESIVES - GLASS INSULATORS

ARMSTRONG CORK COMPANY
INDUSTRIAL @ DIVISION

... These are only a few of the more than 360 products of the sixteen plants of the Armstrong Cork Company.

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# QUICKLY AVAILABLE AT A STOCK POINT NEAR YOU!



Armour's 332 stock points mean fast, dependable service for your present and future glycerine needs.

CHEMICALLY PURE or U. S. P. . . . A high grade, water-white glycerine meeting the requirements of the United States Pharmacopoeia. Suitable for use in foods, pharmaceuticals, cosmetics or for any

purpose demanding highest quality. Specific gravity is 1.249- 25°C./25°C.

HIGH GRAVITY ... A pale yellow glycerine for industrial purposes with a specific gravity of 1.262- 15.5°C./15.5°C.

DYNAMITE ... A yellow glycerine made especially for the explosives trade. It has a specific gravity of 1.262-15.5°C./15.5°C.

YELLOW DISTILLED . . . A yellow glycerine for industrial purposes with a specific gravity of 1.259- 15.5°C./15.5°C.

ARMOUR AND COMPANY 1355 WEST 31ST STREET

Easy Acting . . . Up And Down

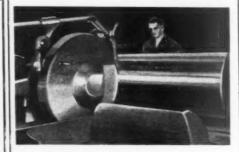
# **Helmet-Goggle**



Designed for acetylene welders who prefer goggles, yet need the con-venient raising and lowering feature of a helmet for inspection of their work. It is made to fit close around the eyes to exclude the light. Has an adjustable headband, with padded sweat band for added comfort. Comes with popular Sellstrom type A lens holder and a choice of lenses in regular acetylene shades.



634-7 N. Aberdeen St. Chicago 22, III.



# PRECISION GRINDING

- **High Production**
- Required Finish
- Long Wheel Wear

If your precision grinding need is a wheel that will give you fast stock removal with better than re-

quired finish—and yet also give you a high pro duction rate per wheel—then put down "DAYTON GRINDING WHEELS" for immediate trial.

You'll find Dayton Grinding Wheels have what it takes—are engineered to fit your job and to do that job precisely as the operation requires.

Wheels of many sizes, grains and grades are regularly carried in stock. Just write, wire, or

SIMONDS WORDEN WHITE CO. 708 Negley Place, Dayton, Ohio

Manufacturers of DAYTON GRINDING WHEELS (Continued from page 202)

both with a base of butadiene. One point made clear in the film is the fact that milkweed, goldenrod, cryptostegia, guayule and similar plants are not sources of synthetic rubber. Rather, they are sources of natural rubber but the quantity of latex in such plants is so small and so difficult to extract they they may never become important factors.

# FILM ON CARBIDE TOOL GRINDING

"Grinding Carbide Tools" is the subject of a new film available to industry through the courtesy of the Norton Co., Worcester 6, Mass. It is film No. 5 in the Norton series of "lessons in Grinding, and its running time is 30 minutes. The series of "Lessons in Grinding", comprises the following subjects: "Cutter Sharpening", 14 minutes; "The Cylindrical Grinder", 20 minutes; "The Surface Grinder", 17 minutes; The Grinding Wheel, Its Care and Use", 17 minutes; "Grinding Carbide Tools", 30 minutes. Films are loaned without charge to industrial plants, and groups that may be interested.

### WAR PRODUCTION BOARD RELEASES "FACTS FOR INDUSTRY"

"Facts for Industry" is the title of a series of statistical data being released by the War Production Board, for the information of commerce and industry. The series provide infomation on such basic factors as production, shipments, inventories and unfilled orders, for products for which the Board has required reports in order to maintain wartime controls. Complete information in regard to "Facts for Industry" reports may be had from the Bureau of the Census, Washington 25 D. C.

# MRO PROCEDURE TO BE USED IN MINOR CAPITAL ADDITIONS

Rules governing the use of the maintenance, repair and operating supplies (MRO) procedure for obtaining minor capital additions have been clarified by the issuance of an amended interpretation, the War Production Board an-

The MRO procedure may be used to obtain materials and equipment for minor capital additions where the cost of such addition does not exceed \$500, excluding the purchaser's cost of labor. This is provided for in CMP Regulation No. 5.

Interpretation No. 11, as amended May 22, 1944, to CMP Regulation No. 5, points out that all labor costs involved in the manufacture of the material or equipment must be included in figuring the cost of an addition. On the other hand, the cost of labor used in construction or installation of a minor capital addition need not be included in figuring the cost.

The interpretation also points out that this rule applies whether the owner of the plant uses his own employees to do

(Continued on page 206)

# Check-List of Tools and Parts

made - and made better -

A glance down the lengthening list of tools and parts in which MO-MAX has been successfully used, emphasizes the opportunities that have re-opened now that this high speed steel is again available. You can now utilize the material that was first introduced, a new idea in basic composition - the first commercially successful molybdenum high speed steel.

With ten years of success behind it ... established with tried, tested and proved performance... the basic composition of MO-MAX is as sound today as when it was first offered to the consumer.

Where toughness, and resistance to abrasion are essential... where outstanding machinability. particularly in grinding, is desired -investigate MO-MAX.

Among the products made of MO-MAX

- Broaches
- Counterbores
- Circular Forming Tools
- Circular Saws
- Cutters
- Dies for Hot and Cold Work
- Drills
- Drill Press Gears
- Flat Forming Tools
- Hack Saw Blades
- Hobs

- Lathe Centers
- Machine Plates
- Metal Marking Stamps
- Milling Cutters
- Reamers
- Slitting Saws
- Spot Facers
- Taps
- Thread Chasers
- Thread Rolling Dies
- Tool Bits

Send the coupon for your copy of a newly revised question-answering technical data book.

THE CLEVELAND TWIST DRILL CO. 1242 East 49th Street, Cleveland 14, Ohio.

NOLYBDENUM.TUNGSTEN

HIGH SPEED STEELS MARKETED UNDER THE

Please send me a copy of your new technical data book on MO-MAX High Speed Steel.

Name Position.

Company

# THEY'RE ALL MO-MAX





BRONZE WELDING RODS . . .

When intricate sections of cast iron, malleable iron, wrought iron,

galvanized iron, brass and bronze or steel must be quickly and economically welded, you will get best results with Titan Bronze Welding Rods.

Among the factors contributing to Titan's superiority in welding alloys are: use of only the purest of raw materials, scientific joining of these materials, strict laboratory control of mixtures and casting temperatures (known as Double Deoxidation), resulting in greater strength, uniformity and ductility.

Titan Welding Rods are used on repair and production work from coast to coast and have proven their ability to speed up production.



. SAN FRANCISCO CHICAGO

Quality Alloys By Brass Specialists Brass and Bronze Rod · Forgings · Die Castings · Welding Rods (Continued from page 204)

the construction or installation work or hires an independent contractor to supply labor for the construction or installation. It also applies where the owner of the plant gets an independent contractor to furnish the materials and labor for the job, and where the owner of plant buys a machine or other article and has the seller do the work of installation.

The same general rules apply to determining the cost of materials needed for installation or relocation of equipment, where such materials are brought under procedures established in Direction No. 15 to CMP Regulation No. 5. This direction permits acquisition of materials costing \$500 or less for the relocation of equipment which a manufacturer has in his plant.

## SPECIAL RULES ON USE OF SO SYMBOL

Special rules under which the War Department may use the SO (small order) allotment symbol for placing authorized controlled materials orders and orders for Class A products have been spelled out in a new Controlled Materials Plans direction, the War Production Board announces.

Under the rules, contained in Direction No. 51 to CMP Regulation No. 1, any one purchase order for any Class A product may be placed by the War Department as a small order, using the SO allotment symbol rather than an allotment, where the total amount of controlled materials needed to produce it does not exceed any of the following limits: Carbon steel (including wrought

iron) ...... 3 tons Alloy steel Copper and copper base alloys Aluminum .....

Similarly, the War Department may place authorized controlled materials orders where the total amount of such materials required by any one order does not exceed the stated limits.

The direction points out that purchase orders may not be split so that they will come within the limits, and thereby become subject to the SO procedure, under which the end use of the materials is not subject to WPB approval. Orders which are placed by the War Department with this procedure will be treated as any other small order, and if the order is for controlled materials forms and shapes of copper, steel, or aluminum, it is an authorized controlled materials

order.

# 1 1 1 REVISED M. P. R. 204 GOVERNS SALES OF IDLE MACHINERY

Provisions of the regulation governing prices for special sales of idle or frozen materials have been extended to include idle machinery, tools, and other assembled industrial products, the Office of Price Administration announces.

This action transfers coverage of these idle machinery articles from the regulation establishing prices for machines and

(Continued on page 211)



# Wartime Lessons That Aid in Planning Postwar Packaging

As a result of packaging lessons taught by the war, the package of the future will be lighter, less bulky, stronger. It will cost less. It will safeguard contents more effectively against moisture, shock, abrasion, crushing, abrupt temperature changes.

Much of this new efficiency is due to increased use of versatile, cushion-like KIMPAK Creped Wadding. Experts have discovered that, with surprisingly little package-weight or bulk, KIMPAK

absorbs severe shocks and blows...protects finish... insulates against sudden temperature variations. It costs little, saves labor, eliminates packaging operations.

Because KIMPAK comes in many different forms, it meets a tremendous variety of requirements. It is made in ten standard types, each in a number of thicknesses, is available in pads, sheets or rolls.

For a post-war packaging plan, call in the KIMPAK man. His expert advice will cost you nothing, and there will be no obligation! Telephone, write or

wire today to Kimberly-Clark Corporation, Neenah, Wisconsin.



fragile, irregularly shaped objects against shock.

This aviation Gyro-Horizon instrument is wrapped with a 60-ply KIMPAK Wrapped Pad between the

This illustration shows accordion-folded pads of different thicknesses, which fill the void that occurs at top and bottom of container as a result of projections on instrument.

\*KIMPAK (trade-mark) means Kimberly-Clark Wadding



A PRODUCT OF

Kimberly

Clark

# WALWORTH BRONZE VALVES



Walworth's complete line of bronze valves, a number of which are illustrated above, includes types designed to fit every service where bronze valves are required. Strict laboratory supervision of the physical, chemical, and metallurgical properties of the materials entering into all Walworth products is supplemented by continuous inspection of the manufacturing operations, both as to accuracy and quality of finish, and by rigid final inspection and testing of each individual product.

No. 328 GLOBE, with Walseal Ends 3000 lb. O.W.G.

Walworth manufactures a complete line of valves and fittings in steel and iron, as well as bronze. Cast iron pipe and three types of pipe wrenches are also made. For full details on Walworth products write, on your company letterhead, for a free copy of Walworth Catalog 42.



WALWORTH

Valves AND fittings
HOSTON WORKS
EWANEE WORKS
60 EAST 42nd ST., NEW YORK 17, N.Y.

# **Testing Seats of Bronze Valves**



Assembled bronze valves are subjected to test under pressure—either air-under-water, steam or hydraulic. The hydraulic seat test is shown here. Walworth Quality Bronze Valves undergo a hydrostatic shell test of three times their rated working steam pressures.

No. 29 GATE, Double Disc-Taper Seat Remember the old copy book axiom, "You can do a better job if you have the right tools"? Well, your machinery can do a better job, too, if properly equipped . . . properly equipped with the right motor . . . one that meets all the requirements of the job . . . "right on the nose".

For example look at the Master motor drive on the right below. By incorporating a motor, an electric brake, a mechanical variable speed unit, and a gear reduction . . . all designed and built into one compact integral power drive . . . it provides variable speed, at exactly the right range, and in addition can be quickly stopped and started again for increased production.

The other unit consists of a motor and a mechanical variable speed drive which are easily combined into an integral unit that gives smooth stepless variable speeds from 600 to 5000 RPM.

Each motor drive mounts neatly on the machine, saves space, saves money and greatly improves the output, safety, appearance and convenience of the equipment.

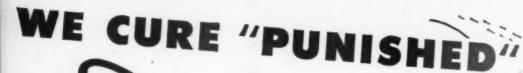
Probably you will not need exactly the same combinations of motor features illustrated below, but the Master line includes motors for every current specification, every type of enclosure, and every type of mounting arrangement . . . in fact, is the most flexible, the most versatile line of motor drives.

Investigate Master's unusual ability to serve you with motors that are right "on the nose," for your plant or your product.

RIGHT ON THE NOSE

THE MASTER ELECTRIC COMPAN.

DAYTON 1, OHIO



by developing alloys with great resistance to strain and stress. Write us about your problems—no obligation.

N·B·M

**BRONZE** and ALLOYS

in all shapes and sizes

# BRAKE SHOE'S RESEARCH GROUP

- 1. Engineering Laboratory
- 2. Metallurgical Laboratory
- 3. Experimental Foundry

NATIONAL BEARING

METALS CORPORATION

ST. LOUIS . NEW YORK

Brake Shoe

PLANTS IN: ST. LOUIS, MO. . PITTSBURGH, PA. . MEADVILLE, PA. . JERSEY CITY, N. J. . PORTSMOUTH, VA. . ST. PAUL, MINN. . CHICAGO, ILL.

(Continued from page 206)

parts, and machinery services, which requires a person who does not ordinarily sell machines and parts to apply to OPA for determination of a maximum price. No change in prices will result from transferring the articles to coverage by another regulation.

In the past, it has been possible for OPA to process these individual applications with reasonable speed. However, the increasing number of war contracts terminations has imposed a large administrative burden, slowing down processing of the applications.

It has accordingly been decided by OPA that the set of general principles already established for the pricing of idle commodities should be applied to machinery, tools, and other assembled in-

dustrial products.

Revised Maximum Price Regulation No. 204, which will now govern sales of the articles, was put into effect August 19, 1943, and "is based on the principle that no purchaser of idle or frozen inventories should pay a price in excess of the price which he would be forced to pay had he purchased such materials from a regular supplier."

(Amendment No. 2 to Revised Maximum Price Regulation No. 204).

# INCREASED NEED FOR MACHINE TOOLS REPORTED

Estimated total machine tool requirements for 1944, including the backlog of unfilled orders, may exceed \$600,000,000 as a result of the heavy artillery and other new military programs, War Production Board representatives told a meeting of the Machine Tool Industry Advisory Committee. In order to meet this requirement, the present machine tool production rate must be kept up or exceeded, WPB officials told the com-The present estimate of shipmittee. ments for the year is \$485,000,000. at its April meeting, members of the committee urged that all available idle machines suitable for current programs be located and utilized to fill the gap between estimated requirements and pro-

A preliminary report of the Tools Division of WPB on a survey of idle Government-owned machine tools was made to the committee. To date, 1,935 war plants using machine tools, or about 60 per cent of the companies requested to reply, have reported 9,207 modern machine tools idle and available for trans-This is less than one month's shipments at the April rate of more than 10,000 units, valued at approximately \$42,000,000.

### FIBRE CONTAINERS FOR NAVY SHIPMENTS-PR AA-1

Fibre containers for shipping hats, gloves, shoes, all outer garments, and underwear and bedding to the U.S. Navy may be obtained under Preference Rating AA-1, the Paperboard Division of the

(Continued on page 214)



# by using HOLTITE fastenings

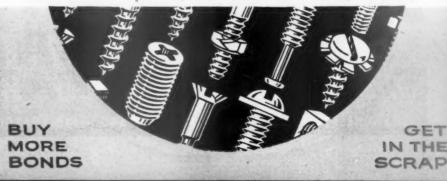
You can change over to post-war production with no fastening worries by adopting HOLTITE as standard practice in every fastening operation. New HOLTITE fasteners, developed and perfected for weapons of war, will lower your assembling time and costs. Our Engineering Department welcomes the opportunity to study fastening problems in your reconversion plans. Let us know the difficulties confronting you and we'll make practical recommendations for their most economical solution.

For all present and future fastening needs specify HOLTITE screws, bolts and allied fastenings.

> Wartime conservation makes it impossible to send catalogs unless requested on your company letterhead



New Bedford, Massachusetts, U.S.





# **How Much Cold Can Rubber Stand?**

Sub-zero temperatures as low as  $-120^{\circ}$  F. are produced by the machine illustrated. It is a

the Deepfreeze Division of the Motor Products Corporation of North Chicago, Ill.

This modern testing machine is used by The Ohio Rubber Company to predetermine the cold resistance of every rubber and synthetic rubber compound formulated to meet specifications for parts to be subjected to sub-zero temperatures.

Unless properly compounded to resist extreme

cold, soft rubber or synthetic rubber can become as hard and brittle as glass, and as easily shattered. Such failures are prevented at "Ohio Rubber" by the use of the machine illustrated.

This is but one of many types of modern testing equipment used by "ORCO" technicians to meet exacting specifications for mechanical molded and extruded rubber parts including special processes for bonding rubber and synthetic rubber to metals and other materials.

Refer YOUR specifications to "ORCO" for thorough and economical production.

# "ORCO-OPERATION"

THE OHIO RUBBER COMPANY · WILLOUGHBY, OHIO

BRANCHES: DETROIT . NEW YORK . CHICAGO . INDIANAPOLIS . WASHINGTON . CLEVELAND





Manufacturers of metal stampings facing problems in the feeding of coiled strip stock to punch presses will find that Wittek Automatic Roll Feeds and Reel Stands conserve man-hours and achieve new high production levels.

Providing an improved and simplified method of punch press operation, Wittek Automatic Roll Feeds and Reel Stands insure rapid, safe and accurate feeding under all conditions. Made in four different types to meet all automatic feeding requirements. Write for complete details. Wittek Manufacturing Co., 4305-15 West 24th Place, Chicago, Ill.



Wittek Hose Clamps for over twenty years identified with the Automotive and Aviation industries, are noted for their permanent leakproof hose connections. For original equipment and replacement.



WITTEK MANUFACTURING CO.

# NEW OFFICERS AT FORT WAYNE



Standing: Herbert Buehler, Wayne Pump Co., National Director, and Richard R. Fisher, Columbia Woolen Mills, Vice President. Seated: Carl Jordan, Horton Manufacturing Co., Secretary-Treasurer, and Haold A. Berry, Fruehauf Trailer Co., President.

(Continued from page 211)

War Production Board announces.

In order to obtain the Preference Rating of AA-1, manufacturers must place orders before July 1, for delivery before August 1, it was pointed out in Direction No. 1 to Preference Rating Order P-146, which controls the ratings to be used to obtain new fibre shipping containers. The direction permits the use of Preference Rating AA-1 for shipment of these articles of apparel under the order solely to the Navy.

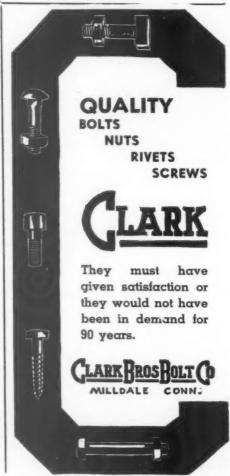
The issuance of the directive will make it easier for manufacturers of these articles to obtain containers for shipment.

REVOKE LIMITATION ON VOLATILITY OF CIVILIAN GASOLINE

Revocation of the limitation on the volatility of civilian gasoline, which has been in effect since November 8, 1943, is announced by Acting Petroleum Administration Ralph K. Davies.

"The cancellation of this directive does not in any way change the present emphasis on maximum production of aviation and other military gasoline," Mr. Davies said. "This action will enable refiners to make a slight improvement in the quality of civilian motor fuels without endangering the manufacture of critical war products. The flexibility of certain refiners will be increased and, in some instances, they will be able to utilize certain components to improve the motor fuel.

"Further, the revoking of the limitation on the use of volatile gasoline fractions at this time is made possible with the advent of warmer weather and the easing of the natural gasoline situation to a point where the restrictions are no longer necessary."





# The Invasion Is On!

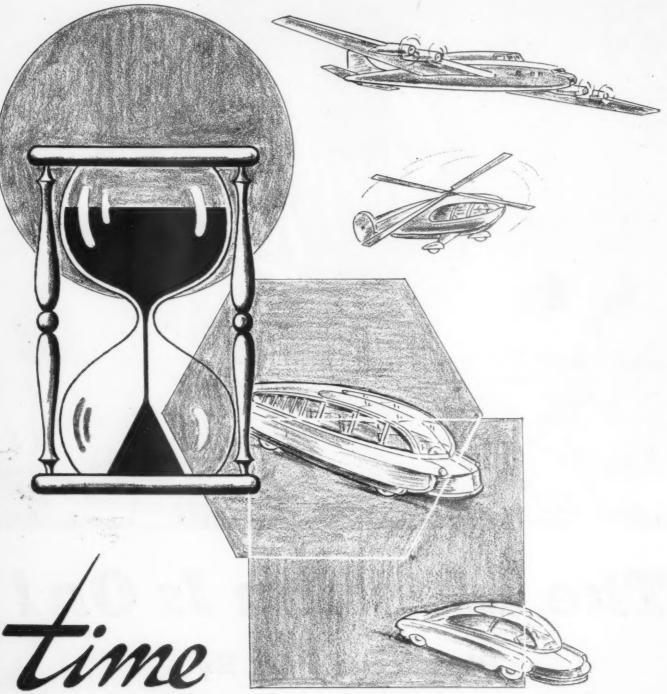
Play Your Part By
Buying More War Bonds
Than Ever Before

# GAYLORD CONTAINER CORPORATION, General Offices: SAINT LOUIS

CORRUGATED AND SOLID FIBRE BOXES

FOLDING CARTONS ... KRAFT GROCERY BAGS AND SACKS ... KRAFT PAPER AND SPECIALTIES

New York • Chicago • San Francisco • Atlanta • New Orleans • Jersey City • Seattle • Indianapolis Houston • Los Angeles • Oakland • Minneapolis • Dallas • Jacksonville • Columbus • Tampa Fort Worth • Detroit • Cincinnati • Des Moines • Oklahoma City • Portland • Greenville • St. Louis San Antonio • Memphis • Kansas City • Milwaukee • Bogalusa • Weslaco • Hamden • Appleton



SHAPES new uses for...BAR STEELS



Looking into the future, brightened by an early victory, we see great improvements in design, and newly developed products in every field

The super-modern motor cars and huge carrier planes, as well as advanced types of machinery and equipment, all will require highly specialized steels.

Many such steels, born of war necessity, are ready to serve these new applications. Still other steels will be needed as special uses arise.

In B&L research laboratories, our engineers are constantly at work, improving our products and developing Cold Finished Bar Steels for the coming requirements of post-war industry.

COLD FINISHED STEEL AND SHAFTING

BLISS & LAUGHLIN, INC.

HARVEY, ILL. Sales Offices in All Principal Cities BUFFALO.N.Y.



# You Can Depend On Us

Because of our years of experience in volume production of metal tubing and stampings, we may have the exact facilities and the "know how" to fabricate what you need, to your advantage.

Noblitt-Sparks makes and forms metal tubing into any shape—welds it to other parts stamped from metal—assembles, plates or paints the entire unit—ready to go into your product. We've been doing that for

many manufacturers—for 25 years—companies who have depended on us for many different kinds of assemblies.

Perhaps we can help you, now or later—with engineering assistance, as well as production. If you have a specific job in mind, write or call...

Vice-President and Director of Manufacturer's Parts Division
NOBLITT-SPARKS INDUSTRIES, INC. - COLUMBUS, INDIANA

NOBLITT-SPARKS
INDUSTRIES

10 plants in four indiana cities

25 years of experience in manufacturing



#### CHANGES IN WIPING CLOTH REGULATIONS

Changes in wiping cloth regulations announced by the OPA state that specific maximum prices are established on two new grades of wiping cloths. Unwashed feather ticking is given a ceiling of 4½ cents a pound, and washed wiperettes have a ceiling of 9 cents a pound, both f.o.b. point of shipment. Coverage of the rewashing provision makes it applicable to any person who washes wiping cloths belonging to a consumer. This change supersedes MPR 165 with respect to such services and establishes a maximum price o 6 cents per pound, clean dry weight, for rewashing.

Because of confusion in the trade as to the difference between jobber and retailer, a retailer is now specifically described as an automobile supply dealer, mill supply dealer, hardware dealer, janitor supply house or chandler who buys washed wiping cloths and resells them to a consumer.

# NO RELAXATION OF TIN

In announcing changes in rules governing the use of tin in solder and bronzes, Erwin Vogelsang, director of the Tin-Lead Division of the WPB stated that the current revision of Order M-43 governing the use of tin in solder and bronzes is a rationalization and not a relaxation. "The need for conservation of tin is still very pressing", he emphasized, "and will continue so as long as the major source of our normal tin supply in the Far East remains in enemy hands. Tin is the only metal today in less supply than before Pearl Harbor.

"We are fortunate to have had a stockpile of tin which has permitted us to meet all military and essential civilian requirements to date. This stockpile, however, is constantly dwindling. Therefore the impression that the U. S. tin position is comfortable and that restrictions will be relaxed is incorrect.

"Specific tin content solders have been regrouped for specific applications. The purchaser must certify that the solder is to be used solely for a specific purpose and that the tin content of such solder conforms to the restrictions and provisions of General Preference Order M-43.

"The total use of tin in solder under the proposed changes will definitely not be increased but, on the contrary, should be reduced."

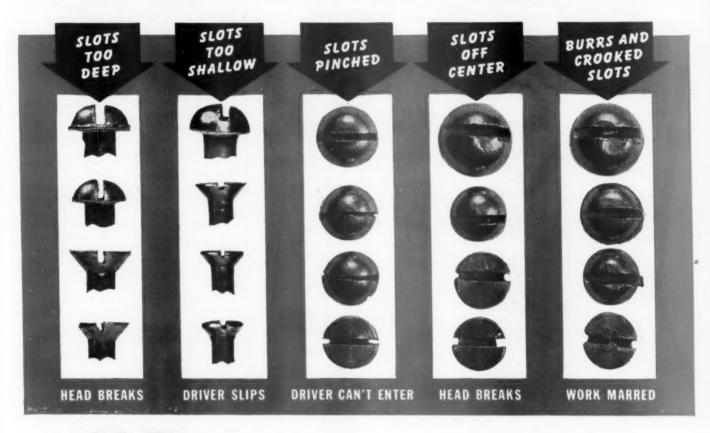
# LUMBER REQUIREMENTS GREATER THAN PROBABLE SUPPLY

1 1 1

Lumber requirements for the third quarter, 1944, are estimated to be nearly one and a half billion board feet greater than probable supply, the War Production Board announces. Requirements for the third quarter and steps to be taken in adjusting demand to supply were

(Continued on page 220)

There's a big difference in Fasteners...even in ordinary Slotted Screws. It pays to insist on Fasteners that are made right. Here are some common faults to look for in Slotted Screws...





It is commonly assumed that "screws are just screws"—all pretty much alike—regardless of who makes them. However, quality varies widely even in the common wood or machine screw, and it makes a lot of difference both in assembly time and in amount of spoiled or marred work.

The enlarged photographs above picture a number of the common faults actually found in a single purchase of commercial screws NOT made by *National*.

Insist on the screws you buy having clean slots of the right depth, properly centered, free from burrs, with good threads and points. Attention to details such as these will result in lower assembly costs and a much better product.

# INTERCHANGEABILITY DEECE Maintenance

THE wide interchangeability of parts designed into "Renewo" and "Ferrenewo" valves has long proved a boon to maintenance men in making their job easier.

Since valves control the very life lines of productive processes-steam, air, water, oil, gas and other fluids -it just follows that every precaution be taken to insure their proper functioning.

Regular checking and inspection, and prompt servicing when necessary, will be repaid in more efficient performance and longer valve life, and may well prevent possible shut-down for more costly repairs later.

The simplicity of design of "Renewo" and "Ferrenewo" valves, with interchangeable parts, makes it easy to keep them in good operating condition, with minimum expenditure for maintenance.

Use the complete facilities of Lunkenheimer distributors.



150 lb. S.P. Iron Body FERRENEWO Regular Type



All parts of the valves above (except bodies and bonnet rings) fit each other perfectly. If, for example, you need a stem, disc or seat ring for the "Renewo", you can use the corresponding part of the "Ferrenewo" -it is exactly the same. This means fewer parts and speedier repairs.

**Speeds Maintenance** 

LUNKENHEIMER VALVES

(Continued from page 218)

discussed at the joint meeting of the Hardwood Lumber Manufacturers and Softwood Loggers and Lumber Manufacturers Industry Advisory Committees.

Probable supply of lumber in the third quarter, 1944, is estimated to be 9,217,-000,000 board feet; estimated requirements total 10,570,000,000 board feet, WPB officials said. Requirements for the quarter, based on reports received under Order L-335, data from claimant agencies, estimated needs of small consumers not covered by the order, are spelled out as follows:

BD. FT

Major industrial consumers (Class I consumers, as defined in L-335, who were required to file WPB Form 3640) .... 6,356,000,000 Military, export, and indirect military construction ...... 1,715,000,000 Authorized civilian construction ..... 1.128.000.000 Civilian maintenance and ..... 1,027,000,000 Small industrial consumers 344,000,000

It now appears, that only 10,000 consumers use more than 50,000 board feet of lumber per quarter, and hence are Class I consumers as defined in Order L-335

#### NEW GLASS AND PLASTIC STRUCTURAL MATERIAL

Successful flight tests of an army basic training plane having glass-reinforced plastic fuselage, side panels and tail cone, mark a research program initiated by the Army Air Forces Materiel Command, Wright Field, Dayton, Ohio, aimed at developing high strength plastic structural materials for use in aircraft construction.

The fuselage is of sandwich construction consisting of a balsa wood core between an inner and outer skin of plastic reinforced with fibrous glass cloth. Ground destruction tests of three fuselages of the same design-one glass reinforced plastic, one of metal and one of plywood, indicate that for equivalent weight the glass sandwich fuselage is considerably the stronger.

On a strength-weight basis the glass reinforced fuselage is 50% stronger than the metal fuselage and 80% stronger than the wooden fuselage.

The goal of the Army Air Forces and the aviation industry has been a highstrength, light weight plastic material that can be molded into intricate shapes without high pressure, high temperature or expensive molds, and that can be used for structural or non-structural aircraft

Research in the fabrication of the glass reinforced laminates and their physical properties was conducted in the laboratories of Owens-Corning Fiberglas Corporation at Newark, Ohio. The glass rein-

(Continued on page 224)



Kropp forgings are becoming available for essential applications as—one by one—our war assignments reach completion and the list of civilian machinery and equipment, to which the green light is given by the federal authorities, grows.

The broader use of forgings has played an important role in the superiority of American planes and other armament—outstanding in their ability to carry on despite abusive service and punishment. Naturally, this trend is being carried into civilian products. Designers recognize the value of the ultimate strength and stress resistance which only the forging process bestows on metal parts; also that the competitive conditions of tomorrow will make it essential for machinery to provide greater service life per dollar of metal cost. That means more forgings.

Forgings get the hard jobs in every piece of equipment—they are the parts which must withstand tensional,

torsional and compression stresses. By the same token, only the best forgings are good enough for the machines of today and tomorrow.

Kropp Forge has been producing tough, dependable forgings for over a century. Our recent assignments have involved conforming with the very rigid specifications of the Army, Navy and the Air Corps. Whatever your requirement in flat die, drop or upset forgings—Kropp can meet it. Today, production facility on certain types of forgings is available as soon as the steel can be procured.

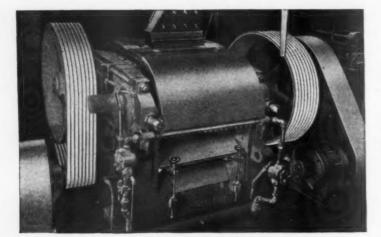
Call the nearest Kropp engineering representative, or send your blueprints direct for immediate quotation.

# **KROPP FORGE COMPANY**

5301 W. Roosevelt Road Chicago (50), Ill.

**Engineering Representatives in Principal Cities** 





# One TYPICAL EXAMPLE

On these flaking rolls where gas Gates V-belts of special synthetic rubber are used because of their proved ability to withstand bad heat and oil conditions. By actual records, on hundreds of installations where oil or heat conditions are severe.
Gates special synthetic V-Belts are
wearing 2 times to 3 times as long
as any natural rubber belts ever

Through More Than 6 YEARS

# ATES Synthetic Rubber -Have Been OUTWEARING Any NATURAL Rubber Belts Ever Used!

Now that all industry depends on belts made of synthetic rubber, it is well worth-while to know that Gates Synthetic Rubber V-Belts have been in nation-wide use for more than 6 years—and through all that time they have been giving service actually superior to belts of natural rubber!

> \*There are, of course, many kinds of synthetic rubber. Gates uses each kind where it best meets some particular service need.

For example:—one special synthetic rubber which Gates uses extensively in making V-Belts has the ability to withstand oil and heat much better than natural rubber can. Where oil and heat conditions are especially severe, Gates special service life of any natural rubber V-Belts ever used.

This is the record not of a few belts over a limited period but of thousands upon thousands of Gates synthetic rubber V-Belts installed in hundreds of plants and factories during the past 6 years.

Gates long headstart in fabricating V-Belts of synthetic rubber is of greater importance to you now than ever before because all the V-Belts furnished industrial plants today are of synthetic rubber.

You will gain a distinct advantage in V-Belt service by simply picking up your telephone directory and calling the Gates Field Engineer. He will bring right into your plant the full benefits of Gates knowledge and experience without the slightest obligation.

# THE GATES RUBBER COMPANY

Engineering Offices and Stocks in All Large Industrial Centers

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**NEW YORK CITY** 

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LOS ANGELES, CAL 2240 East Washington Boulevard

999 South Broadway

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215-219 Fourth Avenue 549 West Washington DETROIT, MICH.

PORTLAND, ORE. 333 N. W. 5th Avenue

DALLAS, TEXAS

SAN FRANCISCO, CAL.

2213 Griffin Street

1090 Bryant Street



# APPROVED FOR THE BULLARD-DUNN DESCALING PROCESS

Equally effective in still tank and electro-cleaning

So positive are the advantages of Turco Prosolv B that prominent electroplaters have switched to this new cleaner immediately following tests although they had considered satisfactory the materials they had been using.

Turco Prosolv *B* insures the chemical and physical cleanliness that is essential to 100% bonding to steel of zinc, cadmium, chromium and other plate. It removes every trace of oil, grease, smut, paint and rust preventive compound. It contains no soap; leaves no deposit. Rinsing is complete, even though parts may have dried.

A highly concentrated product, Turco Prosolv *B* is 100% active. Every particle works: there is no waste.

As this new cleaner is effective in both still tank and electro cleaning, it simplifies stocking and plant procedure where both processes are employed.

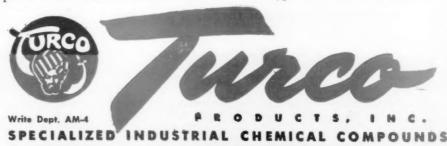
Try Turco Prosolv B for stripping tin deposits formed during the Bullard-Dunn descaling process. A standard

cleaning tank may be used for this. Call the Turco Field Service Man for details on this specially formulated electro and still tank cleaning material which is doing such a notable job the nation over. Write today.

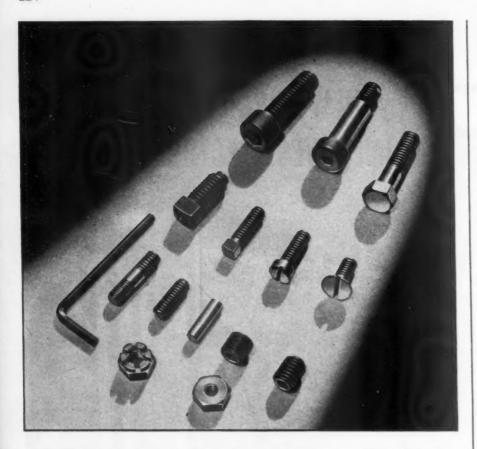
Follow Prosolv B with Turco Descaler This second step in preparing steel for plating is as necessary to a perfect job as the primary cleaning operation in Prosolv B. Any rust, mill, welding or heat-treat scale will prevent bonding of plate. Turco Descaler removes these

without attaching the base metal. Thus the combination of Turco Prosolv B and Descaler insures quality plating at low cost. Let us furnish full details.

Rust Bar treatment for unplated portions. Partially plated parts, if treated with Turco Rust Bar, are well protected from corrosion during indoor storage although subjected to severe conditions. A thin film of Rust Bar is resistant not only to airborne water vapor, but also to corrosive gases and other types of corrosive agents.



MAIN OFFICE AND FACTORY: 6135 SOUTH CENTRAL AVE., LOS ANGELES 1 • SOUTHERN EACTORY: 1606 HENDERSON STREET, HOUSTON 10, TEXAS • CHICAGO OFFICE AND FACTORY: 125 WEST 46TH STREET, CHICAGO, ILL. • SERVICE MEN AND WAREHOUSE STOCKS IN ALL PRINCIPAL CITIES



# 15 Top Quality Standard Screw Products available from one reliable source

Buy your requirements of any or all of the 15 items illustrated above from a distributor of products made by The Chicago Screw Company. It will mark the end of quality problems and the beginning of speedy, trouble-free assemblies.

Every item in this popular line is of excellent quality, in keeping with the fine reputation our company has gained through 72 years experience in the manufacture of threaded products.



These Fine Products are sold only thru Authorized Distributors



# THE CHICAGO SCREW CO.

ESTABLISHED 1872

1026 SO. HOMAN AVENUE

CHICAGO, ILL.

(Continued from page 220)

forcements employed in fabricating the laminates were heat-treated Fiberglas cloths and short, fine fibres known as Fiberglas flock. Each of the combinations of glass and resin was fabricated into one quarter and one-half-inch thick laminated sheets. The sheets were cured at a pressure of 15 pounds per square Test results indicated that on a strength to weight ratio, glass cloth laminates possess physical properties comparable to those of a number of the metal alloys now used for aircraft struc-tural parts. Tensile strengths varied from 43,360 to 54,720 pounds per square inch, Compression strengths as high as 56,820 pounds per square inch were obtained. Modulus of elasticity was 2,200,000 pounds per square inch. Average specific gravity was 1.75. These values are for cross-laminated glass cloths. Strength values approximately twice as high may be obtained with parallel-laminated cloth.

# ALTERNATIVE METHOD FOR PRICING SHORT ORDERS GRAY IRON CASINGS

A new alternative method for pricing "short orders" of gray iron castings has been announced by the O.P.A.

A "short order" is an order for a

A "short order" is an order for a casting where the shipping weight multiplied by the quantity ordered does not exceed 200 pounds.

The new alternative method, effective June 15, 1944, permits a price per pound for short order castings 2½ times the seller's average price per pound for all gray iron sales in 1942.

The action revokes certain provisions of Amendment 7 to Maximum Price Regulation 244, effective March 1, 1944. That amendment permitted a seller to compute a ceiling price for short order castings by multiplying the shipping weight of the casting by twice his average price per pound for gray iron castings in 1942—and by adding a "starting charge" of \$8 or \$12 depending upon whether casting was non-cored or cored.

Experience has revealed that in some cases prices computed under that method were excessive. To take an extreme example, a seller could charge more than \$12 for a casting weighing less than one pound, because of the starting charge.

This alternative method, in eliminating the starting charge, should substantially reduce prices of the short orders of castings. The method provides the foundries a simple way to compute prices, and prizes will be sufficiently high to encourage acceptance of short orders.

(Amendment 8 to Maximum Price Regulation No. 244—Gray Iron Castings).

## MINERAL WOOL STANDARD

The Division of Trade Standards, National Bureau of Standards, Washington, D. C. announces Commercial Standard, identified as CS117-44, for mineral wool blankets, blocks, insulating cement and pipe insulation for heated industrial equipment. The standard became effective for new production as of May 25.

# "53 production days SAVED by **Prompt TALON Service...**

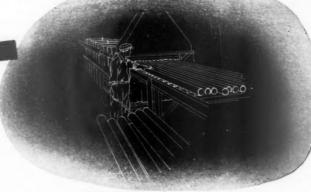
"When condensers failed in a refinery, production of high octane gasoline for the Armed Forces had to be delayed. Best delivery date that could be obtained on tubing for replacement was 60 days . . . too long for Uncle Sam to wait.

"We met the emergency by supplying Talon's electric welded steel tubing within six days, thus saving 53 production days on this important production weapon.

"Although such action is not usually necessary, it demonstrates the ability of our efficient and experienced organization to coordinate our facilities quickly for the benefit of customers."

Grank Delauffer Plant Manager





# Same Day Service on your

Tubing Inquiry Your tubing inquiry directed to Talon's Steel Tube Division will result in price and delivery information the same day - wire requests within two or three hours.

Remember that we can furnish any size electric welded steel tubing from 58" O.D to 4" O.D. and in any length up to 40 feet.

Talon's Steel Tube Division has complete facilities for producing electric welded steel tubing to YOUR particular specifications.

Our furnace, shown here, is the most modern type for stress relieving, annealing, and normalizing.

PRESSURE AND

STEEL TUBE DIVISION

OIL CITY, PENNA.

Tui

# HOW STEEL STRETCHES THE SYLVANIA LINE OF "COMPLETE PACKAGES OF LIGHT"

Government release of steel for fluorescent fixture fabrication enables Sylvania to round out its line of "complete packages of light" to fit all industrial and commercial general lighting requirements.

## Now there are SEVEN INDUSTRIAL UNITS

### Continuous-Row Type

Back into the line come these outstanding Sylvania Fixtures with steel reflectors, designed primarily for continuous-row or end-to-end installations. They are made with the same high quality materials available in 1942.

Single (4-foot) channel top-housing

HFF-104-two 40-watt lamps, for continuous-row mounting HFF-154-three 40-watt lamps, for continuous-row mounting

Double (8-foot) channel top-housing

(Continuous wire-way enclosure reduces cost of continuous-row installations)

HFF-208—four 40-watt lamps, for continuous-row mounting HFF-308—six 40-watt lamps, for continuous-row mounting

All models come completely equipped with lamps, ballasts, and starters — pretested and ready for immediate installation.

#### All-Purpose Type

The famous Sylvania "Fixture of the Future," which has proven so popular in war industry, is now available with a reflector drawn from 20-gauge steel, with a reinforcing lip. Finished with durable synthetic enamel. For either continuous-row or individual mounting.

HF-100S steel reflector has knockouts that provide for easy conversion from two to three lamps. The streamlined top-housing in all models has knockouts that make almost any type of mounting possible. Supplied in "complete packages of light" with lamps, starters, and ballasts, pretested, wired, and ready for immediate installation.

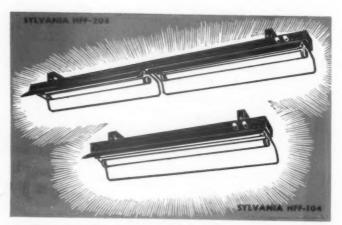
HF-100S-two 40-watt lamps

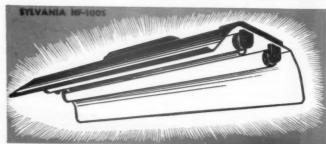
HF-150S-three 40-watt lamps

HF-235S-two 100-watt lamps

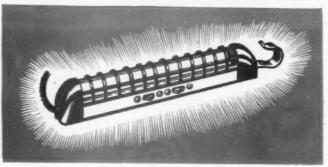
# Portable FLUORESCENT WORK LIGHT FOR INDUSTRY

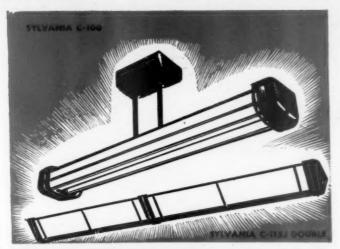
P-7 Sylvania Extension Cord Lamp makes fluorescent light portable for the first time. Compact dimensions —  $10^{1}/4^{\prime\prime}$  x 13/16" x 17/8". Goes anywhere the hand can reach in close-quarter work. Cool and adequate light from a 6-watt Sylvania Fluorescent Lamp is safe and efficient. Steel guard prevents lamp breakage. Handy hook leaves both hands free to work. Operates on 110-125 volts, 60-cycle, AC only.

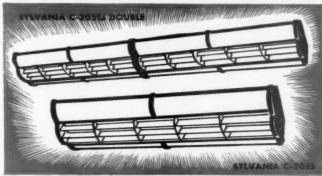


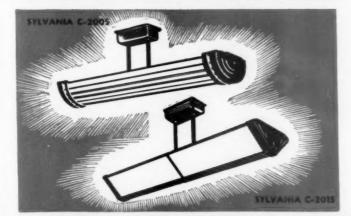












## Now there are SEVEN COMMERCIAL UNITS

#### Two-Lamp Shielded and Unshielded

It is now possible to resume the manufacture of this handsome and adaptable series. All models have steel reflectors and employ 40-watt lamps. This variety of models will make for wider fluorescent application to the commercial and institutional field.

#### Two 40-wats Lamps

C-100 unshielded with pendant

C-101 shielded with pendant

C-113 unshielded surface-mounted

C-115 shielded surface-mounted

All models are supplied with Sylvania Lamps as "complete packages of light."

## Louver Type

These highly efficient fixtures are decorative in appearance but functional in design, with diffusing panels on each side of the lamps and louvers directly beneath. Equipped with four 40-watt lamps. Steel reflectors.

Four 40-watt Lamps

C-205S individual surface-mounted

### Four-Lamp Shielded and Unshielded

These Sylvania Fixtures, which are ideal for stores, offices, laboratories and hospitals, now are equipped with 20-gauge steel reflectors finished with synthetic enamel. New design hinged end-caps and hinged diffusing panels make for easier and speedier maintenance. Supplied complete with four 40-watt Sylvania Fluorescent Lamps, Dua-Lamp Auxiliaries, and Starters — pretested and ready for immediate installation. Available with or without pendant.

Four 40-watt Lamps

C-200S unshielded, surface-mounted, individual C-201S shielded, surface-mounted, individual

# Leading Manufacturer of Fixtures in the Fluorescent Field

IF YOU HAVE A PROBLEM TO WHICH FLUORESCENT MIGHT BE APPLIED, WHY NOT CONSULT SYLVANIA ENGINEERS?

## SYLVANIA "COMPLETE PACKAGES OF LIGHT"

SYLVANIA ELECTRIC PRODUCTS INC., Boston Street, Salom, Mass. Bept. P-744

Please send me information on the fixtures I have checked.

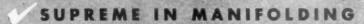
Name

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# KEE OX, NEW PROCESS CARBON

EACH SHEET TRADEMARKED



MARVELOUS IN WEAR

HIGHEST EFFICIENCY
CREATES NEEDFUL ECONOMY

The most wonderful sheet of Carbon ever produced because its wear is phenominal, thus saving money and creating Economy. Made in the FOUR above Brands each in FOUR weights and FIVE distinct finishes to give perfect results. KEE LOX 1944 DUPLICATOR CARBON leads the World in perfect results from all machines in strong Copies and long runs. Send for free Samples of New Process and Duplicator to any of the offices listed below.

KEE LOX MFG. CO., ROCHESTER 1, N. Y., U. S. A.

Branches in Atlanta, Baltimore, Birmingham, Boston, Chicago, Cincinnati, Cleveland, Dallas, Denver, Detroit, Houston, Indianapolis, Jacksonville, Kansas City, Los Angeles, Louisville, Memphis, Milwaukee, Minneapolis, New Orleans, New York, Omaha, Philadelphia, Pittsburgh, Portland (Oregon), Rochester (New York), St. Louis, Salt Lake City, San Francisco, Seattle Toledo, Tulsa; Buenos Aires, Havana, Sydney, or to Export Dept. Rochester 1, N.Y.

# Office Equipment and Supplies

# FORMS FORUM

Presenting "Foundry Order" Combining Molding Order and Core Order: "Receiving Slip"; "Returned Goods Repair Order", and Employee "Tool Sales Slip"

THE first form described in this installment is a "Foundry Order" used by Greenlee Bros. & Co., Rockford, Illinois. The form consists of three parts, the first being the "Foundry Order" illustrated, the second a pink sheet which is a duplicate thereof, and the third on heavy stock which of itself is a three-part form form, the first of which bears the heading "Foundry Molding Order" center section, or tag,

and the third "Foundry Core Order."

F. E. Rundquist, Foundry Manager, gives the following description of the use of the form: "This order is written from the original purchase order, one order blank being used for each pattern and is done in one writing. The order covers part number, name, date, customer's name, customer's order number, quantity, date required, material re-

quired, and has a place for the molder's number when patterns are assigned. There is also a space indicating deliveries made against each pattern and the balance due.

"After the order is written, part No. 3 is detached and delivered to the Pattern Department. The tag is attached to patterns and delivered to the foundry. When core box is taken into the core room the core stub is removed and this constitutes the order for cores. When the pattern is assigned to a molder the center section is removed, molder's number assigned to it and molding price noted. This is returned to the office.

"Upon receipt of this stub at the office, part No. 2, or the pink sheet, is removed from files and delivered to the Cleaning Room, giving them the total number of pieces ordered, deliveries required, and customer's name. Copy No. 1 is then removed from the file and the molder's number taken from stub, is noted thereon. The copy is then placed in the

(Continued on page 232)

	FOUN	49976			
PART HO.		PART NO.			
DATE	CUSTOM	ER		CUSTOMER NO.	
QTY.	WHENWANTED	MATERIAL		MOLDER NO.	
DATE DELIVERED					
OTY. DELIVERED					
BALANCE					

4997	6 FOU	NDRY MOL	DING ORDER	499	76	FOUNDRY	CORE ORD	ER	49976
PART NO.		NAME	1	PART NO.		PART NO.			A.
DATE	CUSTOME	ER.	-	CUSTOMER NO.		DATE	CUSTO	MER	
QTY	WHEN WANTED	MATERIAL	NO. OF CORES	MOLDER NO.		SETS WANTED	WHEN WANTED	NO. 0	F CORES TO A SET
PCS PER MOLD	No. OF MoLOS		NO. OF CORE BOXES	MOLDING PRICE	CORE PRICE	GCRE PRICE		NO. C	OF CORE BOXES
MOLDING PRICE	MOLDER NO.	JOB NO.	3	JOB NO.		JOB		FOUN	B

20%

WINCHESTER INDEX

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#### FURTHER SIMPLIFY RESTRICTIONS ON PAPER AND PAPERBOARD

Restrictions on the manufacture of paper and paperboard, as to grade, weight, size, color, and style, were further standardized and simplified in amended Schedules I to IV, IX, XIV and XV of Limitation Order L-120, issued by the Paper Division of the War Production

The amendments conserve paper-making fibres, such as wood pulp, rags, waste paper, etc., by reducing maximum permitted basis weights of papers and increasing the usable surface area to the greatest possible extent, officials of the Paper Division said. The intensified critical situation in the pulp and paper industry, involving primarily a shortage in wood pulp largely because of the scarcity of labor, equipment and transportation, necessitates the several amendments effective today, it was explained.

Amendments to Schedules I and II, covering paper and paperboard for commercial printing and book papers, reduce maximum pemitted basis weights materially but effect an estimated saving in fibre of about 6 per cent, or a corresponding increase in area or yardage, it was pointed out. No substantial additional filler content is considered practical in these papers, as manufacturers are reported already using fillers to the greatest extent practicable.

#### Weights Reduced

Maximum permissible weights in most grades of fine printing papers, under Schedule III, have been reduced. This should effect a saving similar to that expected in Schedule I and II, officials of the Paper Division said.

An exception to the general reduction in weights is made in Schedule IX, which affects tablets, notebooks, pads, loose-leaf fillers and sheets, and permits use of 60pound manila and gray groundwood drawing paper used largely in elementary schools as water color paper, instead of the 50-pound paper which was found un-

Several print papers for use in magazines, covered by Schedule XIV, were reduced in maximum basis weights, without addition of any more filler.

Among the papers affected are are: uncoated English (machine) finish book papers 25" by 38", reduced from 45 to 40 pounds; uncoated supercalendered book papers, reduced from 50 to 45 pounds. Coated book papers are now limited to a maximum weight of 45 pounds for body stock for use inside publications, and cover stock of this type paper was fixed at 62 pounds for body stock. Regular school drawing paper was reduced in weight from 50 to 45 pounds. The maximum weight of standard newsprint remains at 32 pounds.

Types of groundwood papers now included in a new Schedule XV, requires a reduction in most former standard maximum weights to conserve pulp. No more than three standard grades of this type of paper are now permitted, and in two grades, selected by the paper manu-

(Cantinued on page 234)



One of the Weston war services of which we are most proud is the manufacture of this fluorescent map paper. It has the stamina and resistance to rough handling and the elements that are essential for war duty. These qualities are inherent in the Weston cotton fibre content papers on which your future records, documents, accounts and correspondence may be placed with lasting assurance.

As your supplier will tell you, this simple rule is all you need to keep in mind:

if it's worth keeping, keep it on a WESTON Paper

BYRON WESTON COMPANY

DALTON, MASSACHUSETTS

MAKERS OF HIGH GRADE PAPE

EVERY WESTON PAPER IS A COTTON FIBRE CONTENT PAPER

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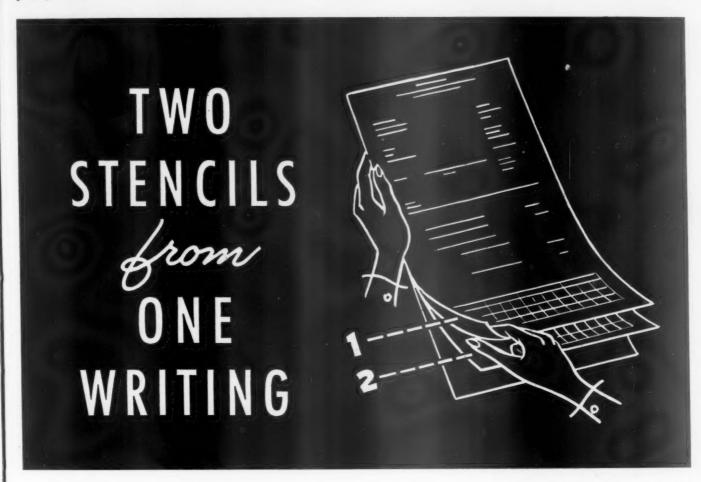
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# It's the New Mimeograph Double Stencil

Mimeograph duplication, using double stencils, is the answer to many a time-consuming business procedure. It not only eliminates unnecessary rewriting, as does all Mimeograph duplication, it also eliminates the need for typing a second stencil in more involved types of paper work where it would ordinarily be necessary.

For with the new Mimeograph double stencil, one writing prepares two stencils. The first one to be used for the immediate purpose -the other to be held for additional fill-in.

Navy contractors, for example, have found that Mimeograph duplication, using double stencils, is the made-to-order answer for their recommended shipping and billing procedure. The first stencil is used to produce all work copies and to make actual shipment. The second is saved to report and bill the shipment after it has been made. It is all done without cleaning and filing stencils, and without rewriting of stencils. Time is saved, chance of error is eliminated. There is sure, accurate control all along the line. Write for full details at no obligation. Just mail coupon below to A. B. DICK COMPANY, Chicago 6, Illinois.

	4
Mimeograph	A. B. Dick Company, Dept. P-744  720 W. Jackson Blyd., Chicago 6  720 W. Jackson Blyd., Chicago 6  Send me full details on the use of the Mimeograph double stencil.  Send me full details on the new Mimeograph method of handling shipping and billing to the Navy.
	of handling shipping and
duplicator	NAME
dupiteator	COMPANYSTATE
MIMEOGRAPH is the trade-mark of A. B. Dick Company, Chicago, registered in the U. S.	CITY

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by buying quality

# CARBON PAPER ROLL PAPER RIBBONS

through **Burroughs Discount Purchase Plans** 

> DISCOUNTS 10% to 40%

An order for as little as \$10 worth of ribbons and carbon paper receives a 10% discount. Discount rates increase-up to 40%-according to the size of your orders, with purchases of carbon paper helping you earn larger discounts on ribbons, and vice versa. As an extra convenience, Burroughs makes deliveries as needed, to assure you fresh supplies and no storage problems.

Plain or carbonized roll paper and other quality supplies for practically every type and make of business machine also at substantial savings. For prices and terms, call your local Burroughs office or write direct to-

Burroughs Adding Machine Company Detroit 32, Michigan



(Continued from page 229) live file which permits in checking shipments the handling only of orders which are actually in work. Job numbers are also added onto order for distribution of direct labor and selling prices. Occasionally, the weights of castings are added to copy No. 1 giving us complete records of all transactions involving each particular pattern. When the order is completed, copy No. 1 is filed by customer's name and by pattern symbols. This gives us a very accessible record or history of each pattern handled."

# Receiving Slip

This "Receiving Slip" is used by The Oilgear Company", Milwaukee, Wis. It consists of four identical parts - Purchasing Department the packing ticket of the vendor and the purchase order as issued by the Oilgear Company. The receiving clerk then tears off the Purchasing

Purch. Dept. Copy

## RECEIVING SLIP

15300

# THE OILGEAR CO.

MILWAUKEE, WISCONSIN

RECEIVED I	FROM			
ADDRESS_				
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VIA			CHARGES	
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		PMENT-RE	MARKS	
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RECEIVED	BY	REC	EIVING INSPECTION	
RECEIVED	BY	REC	EIVING INSPECTION	
RECEIVED	BY	REC	EIVING INSPECTION	
RECEIVED	BY	REC	EIVING INSPECTION	
RECEIVED	BY	REC	EIVING INSPECTION  REASON FOR REJECTION  .	
RECEIVED	PASSED	REC	EIVING INSPECTION	
RECEIVED	PASSED	REC.	EIVING INSPECTION  REASON FOR REJECTION  .	
RECEIVED	PASSED SHED	REC.	EIVING INSPECTION  REASON FOR REJECTION	

Copy, white; Material Control Copy, yellow; Stock Room Copy, green; and, Receiving Department Copy, pink. G. L. Hartman, Director of Purchases, states the slip is used as follows: "The Receiving Department upon receipt of goods fills in all information specified on the receiving slip up to and including "received by." The necessary information is, of course, obtained from

Department copy and delivers it to that department. The receiving department copy is also removed and retained in the receiving depart-ment files. The other two copies then accompany the material to the inspection department, where that portion of the receiving slip which refers to inspection is filled in, one

(Continued on page 238)

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# THIS TAX CAN BE REPEALED WITHOUT AN ACT OF CONGRESS

How American business can remove a serious obstacle to postwar employment and profits

OUR company's own tax experts probably never suspected its existence. Yet individual businesses have discovered they're paying it—in one case and in one department of a medium size company, to the tune of \$144,000 annually.

That's a tremendous tax load to be carrying, voluntarily—at any time. And it's a tax you can't ignore when this war is over. Your competition won't let you. And more important, your own interest in creating postwar jobs won't let you.

For it's a tax that is ultimately reflected in prices. And by widening the gap between what people want to buy and what they have the money to buy, it reduces sales, slows up production, wipes out jobs.

#### WHAT IS THIS TAX?

It's the tax imposed on products...by inefficient paperwork...the waste due to inadequate control systems in both office and factory. It's the high cost of records not the cost of paper and ink, but the price paid in time and labor to make and operate them. Elimination of this tax offers an almost untapped source of cost-reduction that can be reflected in the selling of your products.

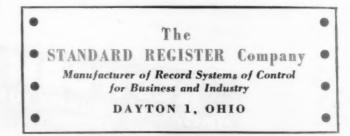
Under the forced-draft of wartime pressure many companies have discovered they're paying this needless tax.

## HOW CAN IT BE REPEALED?

It can be repealed the same way American business eliminated another tax—the tax which early factory methods imposed on the cost of automobiles and other products. Just as streamlined production methods reduced costs, put products within reach of millions of more pocketbooks...so can simplification of record systems and methods turn waste into value, make less money buy more—to make more sales, more jobs.

Studies by Standard Systems Experts and their staffs of analysts, form design engineers and business machine specialists have affected such savings amounting to thousands of dollars for many of America's leading businesses as well as many military and government agencies. Would you like to see some actual case studies? More than 100 are available. Write for a sample Formcraft Digest and check-list. No obligation, of course.

Standard's control systems are now being produced for customers in war industry and government to the limit of our capacity, but preparatory studies may be begun to enable you to convert to Standard's Formcraft Engineered Systems quickly, depending on production facilities available.



Pacific Coast: Sunset McKee-Standard Register Sales Co., Oakland, Calif. Canada: Crain Printers, Ltd., Ottawa. London: W. H. Smith & Son, Ltd.



REDIFORM
TIMESAVING BUSINESS FORMS
AND SYSTEMS

AMERICAN SALES BOOK CO., INC., Subsidiaries of Moore Corp., Ltd., NIAGARA FALLS and ELMIRA, N. Y.

(Continued from page 230)

facturer, two colors, white and India only, are permitted. In the other grade paper may be made in three additional colors if the producer desires.

Most grades are limited to 21, 23, 25, 28, 31, 35 and 40 pounds, but in certain grades maximum weights run up to 45 and 50 pounds. Under type B, only one groundwood printing paper may be manufactured in white and India, but maximum weights run from 30 to 45 pounds for special uses in juvenile book manufacturing. Novel news is limited to one grade weighing 30 to 32 pounds, in white only. Mimeograph paper is fixed at two grades, white and six colors, and limited to substance weight 16 pounds.

### CARBON FORMS SCHEDULED UNDER GSO M-293

Continuous and interleaved carbon forms have been added to the list of items scheduled under War Production Board General Scheduling Order M-293. as amended April 24, in order to assure their availability, according to Robert D. Ross, chief of WPB's Commercial Printing Section.

These forms were listed as an "undesignated" item, which meant that no schedule need be filed by manufacturers and printers unless requested by WPB.

When and if any producer of continuous and interleaved carbon forms is requested to submit a production schedule, all orders must be given precedence on that schedule in accordance with instructions that will be supplied by the WPB at the time the schedules are requested, Mr. Ross said.

He explained that this procedure has been established to provide assurance that all Government war agencies and manufacturers producing essential materials will be able to obtain forms of this type necessary for the efficient continuation of their operations.

Action was taken by issuance of Table 16 to General Scheduling Order M-293.

#### CONSIDER DISPOSAL OF GOVERNMENT SURPLUS TYPEWRITERS

"Good authority has stated that there are no surplus typewriters in the Government now, nor any immediate prospect of it", declared Clarence E. Bush of the General Typewriter Co., Washington, D. C., at a meeting of the New England Office Machine Dealers Association in Boston.

"Surpluses are expected to develop in three waves. The first peak of Government surplus will be when war contractors liquidate. The second peak will develop when we have victory on one front. The third peak will come when we have achieved a final victory. To these Government surges of machines must be added that large numbers of trade-in typewriters when commercial manufacture is resumed.

"Many guesses have been made as to

(Continued on page 236)

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# INTERNATIONAL COOPERATION



# They Put the "NZ" in Anzac...

Back in 1915 New Zealanders put the "NZ" in ANZAC when the Australian and New Zealand Air Corps combined. Yanks, too, are experts at teaming up with other husky lads possessing keen eyes and rugged grins. No wonder Yanks and New Zealanders "down under" have clicked from the very start. And this is the kind of hearty International Cooperation that gets things done the world over.

At home we can help the cause for which they're fighting by doing the important daily little things such as saving waste paper. International Paper Company urges careful conservation and constant salvaging of paper — for paper is a vital material in winning the war.

5TH WAR LOAN...BUY MORE THAN BEFORE

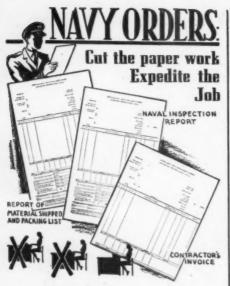
# International



PAPER COMPANY

220 E. 42nd ST., NEW YORK 17, N.Y.

PAPERS FOR PRINTING AND CONVERTING



One Ready-Master Form Saves Two-Thirds the Work By Combining Important Data

As a result of a Navy simplification and speed-up plan, one form now does the work of three, combining the Inspection Sheets, Report of Material Shipped (and Packing Lists, too), and Invoices. In one plant alone 22,000 work hours a year will be saved.

Whether you have Navy or other government contracts or private orders, this same time-saving method, or simple modifications of it, will cut your paper work and expedite production and delivery.

Ready Master eliminates separate typing of individual reports; combines them. Ready Master duplicates copies without rewriting - faster, cheaper, more efficiently than by other processes - with simpler, less expensive duplicating equipment.

Ask the Columbia office nearest you, or your Columbia dealer, to show you sample forms, to show you how you can apply Ready-Master to do the same job for you that it is doing in hundreds of widely varied busi-

# COLUMBIA READY-MASTER

COLUMBIA RIBBON & CARBON MANUFACTURING CO., INC.

> Main Office & Factory Glen Cove, L. I., N. Y.

NEW YORK • KANSAS CITY, MO. • GHICAGO • DETROIT • MILWAUKEE • MINNEAPOLIS • NASHVILLE • • MINNEAPOLIS • NASHVILLE
PHILADELPHIA • PITTSBURGH
PORTLAND, ORE. • CINCINNAT • CINCINNATI

(Harris-Moers Company)

Also: London, England; Sydney, Australia

(Continued from page 234)

the number of typewriters that will become surplus in the Government. As vet no one has come forward with figures that could be substantiated.'

Mr. Bush cited sales of 454,616 typewriters to the Government during the years of 1940, 41 and 42, and 413,547 to defense plants. "Conceding for the sake of argument that these figures were correct", he continued, "still we would not have the amount of the Government surplus. We do not know how many will be retained in the Government service. how many will be left abroad, nor how many will be broken and beyond rehabilitation

He declared that from the standpoint of the typewriter trade, the sale of surplus typewriters should be controlled. and limited to the trade and not to speculators, commission merchants, and the general public.

#### METAL OFFICE CHAIRS OUT-WOOD CHAIRS PERMITTED UNDER WOOD FURNITURE ORDER

4 4 4

Members of the Wood Office Chair Industry Advisory Committee have been told that production of metal office chairs cannot be resumed in the immediate future, the War Production Board reports.

Steel requirements for the third quarter of 1944 exceed the expected supply by about 1,000,000 tons, WPB representatives said. Military requirements for steel to produce shells, troop transports, and other combat material have increased to such an extent that other essential programs, as those for rail and tin can production, have had to be cut back. It is therefore impossible to make steel available for the production of metal office chairs at this time, the WPB officials told the committee.

Until the lumber order L-335 is amended, and lumber is allocated for the various purposes for which it is needed, wood office chair manufacturers may continue to use lumber at the rate permitted under the wood furniture order, L-260-a, WPB officials said. Under that order, furniture manufacturers may use, per quarter, 21 per cent as much lumber as they used for furniture in 1943. WPB expects to effect lumber allocation in the third quarter of 1944.

#### WAXED PAPER INDUSTRY ADVISORY COMMITTEE APPOINTED

Eighteen manufacturers, representing all branches of the waxed paper industry, have been appointed to a Waxed Paper Industry Advisory Committee, according to the Office of Price Administration. The committee follows:

Philip C. Toye, American Tissue Mills, Holyoke, Mass.; Clarence W. Hoeper, Badger Paper Mills, Inc., Peshtigo, Wis.; Sidney Jacobson, Henle Wax Paper Mfg. Co., New York, N. Y.; Ed. Lewandowski, The Menasha Products Co., Menasha, Wis.; Donald Ramsey, Nashua Gummed & Coated Paper Co., Nashua, N. H.; J. E.

(Continued on page 242)



Star Staplers are needed on every desk. They use less steel to fasten papers than other methods of fastening. They are built to last and are guaranteed against defects. Essential industries can still be supplied. Model S 122 A shown above lists for only \$1.90. Write for Catalog.

He'll get your letter without fail If you will send it by V-MAIL

# PAPER FASTENER CO.

DEP'T P., NORWALK, CONN.



GENUINE - ORIGINAL

# MAK-UR-OWN

## CELLULOID INDEX TABS

Brightclean Makur-own tabs are made and attached to active records in a moment, save hours of searching



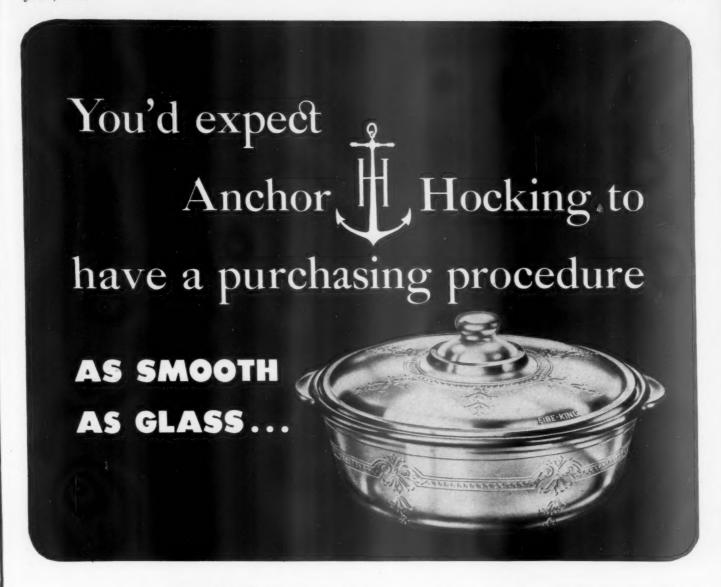
ANY INDEX

Seven colors, three widths, printed sets A-Z, days, months, etc., in 6-inch strips fill every indexing need. Die-cut shield tabs in four lengths for uniform indexing of similar books.

See Your Stationer Today. Equip every desk with handy MAK-UR-OWN INDEX TABS.



THE VICTOR SAFE & EQUIPMENT CO., INC.



AND HERE IT IS - A highly effective yet simple

purchase and follow-up routine assures the Anchor Hocking Glass Company of materials and supplies in a smooth flow—though production has expanded tremendously.

Purchase requisitions are sorted by product classification and passed to the interested buyer. Reference to the Kardex Commodity Purchase Record, located adjacent to each buyer's desk, instantly reveals all needed data—full details of previous purchases, a list of approved vendors, and complete specifications covering the item. This "Fact-Power" of Kardex *Visible* Record Control provides the whole story in one pocket. Result: quick and accurate decisions!

A Kardex Vendor Record not only facilitates correct typing of orders. It also expedites handling by assuring that each order will be sent to the address from which the requisitioning plant is serviced.

Visible signalling assures positive control of follow-up action, the follow-up folder serving as a "home" for all papers related to the order.



#### SEND FOR FULL DETAILS

You'll find helpful ideas in a new foldershowing how Anchor Hocking achieved operating efficiency at the lowest cost. Ask our nearest Branch Office for Systems Narrator No. 581—and for a comprehensive study of efficient systems, get our new 64-page book "Purchasing Department, Records and Routines".

ORVEIGHT 1944

SYSTEMS DIVISION

REMINGTON RAND

**Buffalo 5, New York** 

J





Precision built by skilled workmen. All-steel construction. Staples and pins. Guaranteed to give perfect stapling satisfaction.



A durable, long-life, finely constructed Stapler at a price that defies competition. Staples, pins and tacks. Carries Ace's iron-clad guarantee.



Here's a real money saver. Light weight, easy action and built to last a lifetime. One of Ace's most popular models. Guaranteed.

SOLD THROUGH DEALERS EXCLUSIVELY

ACE FASTENER CORPORATION 3415 North Ashland Ave., Chicago 13, III.



(Continued from page 232) copy being retained for its files, the yellow copy being sent to material control for recording.

"The advantage of using this type

of receiving slip is that it eliminates a separate form called an inspection or turn-in ticket which contains practically the same information required on the receiving slip."

# "Returned Goods Repair Order"

Here is a "Returned Goods Repair Order" form used by the Chicago Electric Manufacturing Co., Chicago, Ill. It consists of four identical sheets in blue, white, orange and yellow.

the Sales Department. The Sales Department fills in its instructions on all three copies, sending the No. 2 copy to the Accounting Department to be held until the item is served and shipped. The No. 1

£876346	76 030	ENTENDIONI ENTENDIONI			RETURNE	D GOODS RE	PAIR DRDER			RETURN ORDER N	. R_	25	520
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P. E. Kennedy, Sales Department, advises as follows: "We put this form into operation after considerable thought. We feel that it eliminates clerical work and that it gives the whole history of an item sent in for service. This report originates with our Service Manager rather than with our regular Receiving Clerk. The disposition of the report is as follows:

"The Service Manager makes out four copies of the report showing receipt of items returned for service. He reports his findings retaining the No. 4 copy in his department and forwarding the other three to copy is sent back to the Service Department, and the No. 3 copy to the Production Department.

"The Service Department performs the necessary work as indicated on the No. 1 copy and sends it and the goods to the Shipping Department. The Production Department uses the No. 3 copy for its inventory and protection records. After the Shipping Department finishes with the No. 1 copy, they forward it to the Accounting Department who in turn matches it with the No. 2 copy and mails out the billing."

# Tool Sales Slip

Next is a "Tool Sales Slip" used by the Oldsmobile Division, General Motors Corporation, Lansing, Michigan. It is made up in four identical copies, one for the Accounting Department, Employee's Copy, Tool Crib Copy, and Auditing Department Copy.

partment Copy.

E. W. Schuon, Divisional Comptroller, states that the form adequately serves its purpose in the job of procuring precision tools for

the employees. The form is used with a register, the use of a register with a cash box providing facilities for the handling of cash. Though the form provides space for cash purchases or for payment of tools by pay roll deductions, the pay roll deduction method has been discontinued and all tools sales are now made on a cash basis.

The procedure covering procure-(Continued on page 240)

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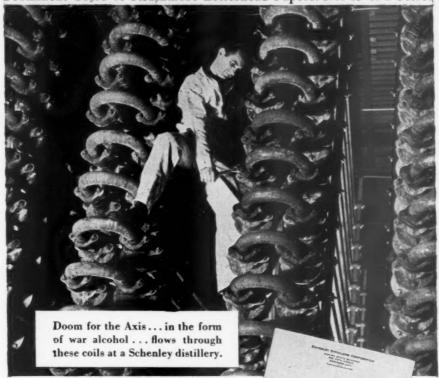
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Prominent Users of Strathmore Letterhead Papers: No: 49 of a Series



# does your letterhead say, "PROGRESS"?

An "ocean" of alcohol...that's the war order our government gave to U. S. distillers. And that's the order on which Schenley's giant distilleries work night and day. But Schenley enterprise doesn't stop there . . . Schenley Research discovered a method for mass production of vital Penicillin, and is working on other projects of lasting service.

The Schenley letterhead, on fine Strathmore paper, is representative of this progressive, forward-looking organization. Your letterhead speaks for you in a hundred daily contacts. Now that lighter weight papers are a wartime necessity, quality becomes more important than ever. The Strathmore watermark is your assurance of that quality.

Strathmore Papers for Letterheads: Strathmore Parchment, Strathmore Script, Strathmore Bond, Thistlemark Bond, Alexandra Bond, Bay Path Bond, and Alexandra Brilliant.

# STRATHMORE OF FINE PAPERS

Strathmore Paper Company, West Springfield, Massachusetts

# TODAY'S PICTURE

Current Strathmore advertising points out how essential paper is to the war effort, features leading industries that use Strathmore in their Victory programs, stresses the point that good letterheads help maintain the reputation every firm is guarding today.

\* \* \*

This series appears in:

FORTUNE
TIME
BUSINESS WEEK
UNITED STATES NEWS
NEWSWEEK
FORBES
ADVERTISING & SELLING
TIDE
PRINTERS' INK

SALES MANAGEMENT

JI



# THIN PAPERS

are Essential to MODERN BUSINESS

to reduce
Office and Factory
expenses.

Specify one of

# ESLEECK THIN PAPERS

Fidelity Onion Skin
Clearcopy Onion Skin
Superior Manifold

Recommended for Thin Letterheads, Copies, Records, Advertising.

Ideal for Air Mail, Branch
Office and Foreign
correspondence.

SEND FOR SAMPLES

# ESLEECK

Manufacturing Company
Turners Falls, Mass.

(Continued from page 238) ment of precision tools by employees engaged in war work provides that "tools shall be ordered only when needed by an hourly employee for ordered for resale to employees. Four copies of the Employee's Order for War Work Tools (Form Olds 1698) are signed by the employee, all four copies being wit-

ACCOUNTING DEPT. COPY

300 TO 1	OLDSMOBILE DIVI	SION	No. 12	2652
PAYROLL		P	urchase Order No	
Employee Name		Cluck No.	Date	
QUAN, TOOL NO.	TESCRIPTION	MAKE	MRICE EACH	TOTAL
	9			-
				-
hereby authorize the Oldsm	obile Division - General Motors Corporation	to deduct the	TOTAL	
Amount \$				
Each week beginning			SALES TAX	_
and continuing until the full; by the Oldsmobile Division - leave the employ of Oldsmob	price of the merchandise described heroin has Ceneral Motors Corporation. In the event ide Division - GMC I agree to pay in full, est suning unpaid balance on this merchandise.	timet I elements	GRAND TOTAL	
Signed	Ci	anad		

his work in this plant". The price charged the employee is the price shown on the Vendor's invoice rendered against Purchase Order issued, plus Michigan sales tax.

A special inventory account covers the purchases and sales of tools,

nessed by employee's foreman and superintendent. All sales are on a cash basis, and no tools are delivered until a Tool Slip has been prepared and the signature of the employee secured.

(Concluded on page 242)



# THE NEEDLE IN THE HAYSTACK!

Every purchasing agent looks for a needle of relief in that haystack of troublesome small orders

-and now it's been found! Yes, it's R. O. H. Hill's new coupon book system for ordering business cards . . . a system that eliminates almost all detail.

First, you buy a coupon book, or books—the price depends on the number of coupons and the type card desired. When someone needs business cards you tear out coupons to cover the quantity—fill in the few instructions—mail to Hill. And that's all! There's no proof to read, no delivery detail (Hill delivers direct, anywhere in the U. S.)—one check to draw, one invoice to put through the books, and you're through with this detail.

So, to make your job easier, get in touch with R. O. H. Hill today. We'll send full particulars by return mail.

270 Lafayette Street New York 12, N. Y. CAnal 6-6340



**Engravers and Thermographers** 

Business Cards-Letterheads-Announcements and other "Ambassadors to American Business"



# "Yorick is our oldest employee"

Alas, poor Yorick! He's 'way behind the times. What he and his boss need are some up-to-date records...records that keep pace with modern high-speed production.

Year in and year out, Uarco has been helping thousands of businesses improve their records... supplying business with forms that increase the efficiency of plant and office routine. Here are forms that put an end to guesswork and needless mixups caused by obsolete record keeping methods. Uarco forms put accurate information where it is needed, when it is needed.

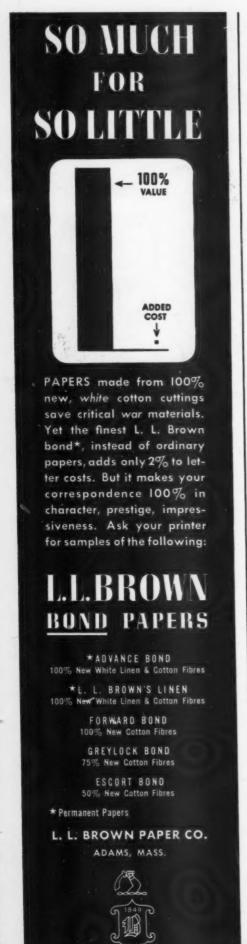
Eliminating duplicated effort is another job for Uarco. For, with these forms, 7 or 8 or more clear carbons can be made in a single operation... thus preventing errors due

to excessive departmental record making. Uarco forms are especially made for your particular needs. They are designed either for handwritten use or for machine use, may be carbon interleaved or non-interleaved, may be used in a Uarco Autographic Register, typewriter, billing machine or tabulating machine.

Why not find out today the many ways that Uarco forms can help your business? If existing forms will not solve your problem . . . Uarco will design forms that will. A Uarco representative will gladly consult with you . . . without obligation on your part.

UNITED AUTOGRAPHIC REGISTER COMPANY Chicago, Cleveland, Oakland • Offices in All Principal Cities





Employees Name, Clock number, Quantity, Tool Number, Description, Price, Total sales, Michigan state sales tax, grand total, em-ployee's signature, and tool crib attendant's signature.

When a Tool Sales Slip has been completed and duly signed, the first three copies are stamped "Paid", the original going to the Accounting Department, the second to the employee, the third to general stores, and the fourth copy goes to the auditing section.

WASTE PAPER INDUSTRY ADVISORY COMMITTEE FORMED

(Continued from page 236)

Edelstein, Rap-In-Wax Paper Co., Minneapolis, Minn.; A. F. Kletzion, Saniwax Paper Co., Kalamazoo, Mich.; Jules Wolbrette, Southern Paper Ltd., New Or-leans, La.; Edgar J. Berkley, Waxide Paper Co., Kansas City, Mo.; R. H. Rausch, Automatic Paper Machinery Co., Hoboken, N. J.; H. K. Snyder, Central Waxed Paper Co., Chicago; A. Southon, Kalamazoo Vegetable Parchment Co., Kalamazoo, Mich.; R. C. McCaskey, Minerva Wax Paper Co., Minerva, Ohio; Leslie L. Jacobs, Pollock Paper & Box Co., Dallas, Tex.; A. P. Mitchell, Riegel

(Continued from page 240)

The following information is Masey, H. P. Smith Paper Co., Chicago, shown on each tool sales Slip: Date,

The following information is Masey, H. P. Smith Paper Co., Chicago, the continued from page 240)

The following information is Masey, H. P. Smith Paper Co., Chicago, the continued from page 240) per Co., Dayton, Ohio; George C. Wie-man, Western Waxed Paper Co., Los Angeles, Calif.

#### 1 1 1 ADJUSTMENTS IN CEILINGS ON CONVERTED PAPER PRODUCTS

Producers of a variety of converted paper products have been provided by the Office of Price Administration with a method of obtaining individual adjustments in their ceilings, provided two conditions can be met.

The conditions are: (1) That their maximum prices are subjecting them to substantial hardship, and (1) either continuance of the production is required to meet a military or essential civilian need, or loss of the production will force their customers to resort to higher-priced sources of supply.

The action has been taken because it appears that existing ceiling prices for these products may threaten to impede the continued production of some items, OPA explained. Applications must be filed with QPA at Washington, D. C. when adjustments are requested. None of the adjustments requested, if granted, would affect retail prices, the agency said.

Producers of the following articles are affected: Envelopes, paper cups and paper containers, sanitary closures and milk bottle caps, drinking straws, certain sulphate and certain sulphite papers, certain (Continued on page 244)



# When TIME

is important ...



Starting with a few Underwood Sundstrands, one large grocery chain now uses 4,800!



For its batch sheet and transit letter listings, a New York bank has purchased 150 Underwood Sundstrands.



Expense distribution is just one of the many uses a large electrical manufacturing company finds for its



One of the world's largest motor car manufacturers uses 500 Underwood Sundstrands in its accounting department and in its general offices.



Preparation of statements and general office work are handled by a meat packer with a battery of 400 Underwood Sundstrands.



# Figure on an Underwood Sundstrand!

Faster, easier figuring saves precious minutes every hour.

When you figure on an Underwood Sundstrand you're figuring on a machine that pays for itself as you figure.

Basic principle of the Underwood Sundstrand is its simple method of 10key "touch operation." With all figure keys under the fingertips of one hand, operators can quickly attain speeds they never thought possible.

And because their eyes are kept on

the work sheets and don't have to help the fingers "pick and choose" from a multiplicity of keys, there is no backand-forth headswing to cause fatigue.

A call to your Underwood Sundstrand representative will bring you, without obligation, interesting information on this time-saving adding-figuring machine.

Underwood Sundstrand Adding-Figuring Machines are available subject to War Production Board authorization.

Save the Seconds and You Save the Day-

# **Underwood Elliott Fisher Company**

One Park Avenue, New York 16, N. Y.

Makers of Underwood Typewriters, Accounting Machines, Adding-Figuring Machines and Supplies. Our factory at Bridgeport, Connecticut, proudly flies the Army-Nauy"E, "awarded for the production of precision instruments calling for skill and craftsmanshin of the highest codes



\*LETTERHEAD-ACHE:

Executive annoyance resulting from the fact that many wartime letterheads on non-rag or part-rag paper tend to be somewhat dull and gray. CAUSE: Wartime shortages of bleaching chemicals. CURE: Step Write today for
FREE Comparison Kit.
Visual proof, at a glance,
why only all-rag paper
is good enough for
your letterhead!

up your letterhead all the way to ALL-rag Anniversary Bond — the one type of paper that's just as white, clean, crisp, permanent and impressive as before the war! . . . Firm cotton fibres stand up under repeated erasures. Strong . . . even in light weights, Anniversary Bond can take rough handling—reaches the other fellow's desk fresh and uncrumpled. More expensive? . . . yes, a trifle — only 6¢ more per day if you use 10,000 letterheads a year . . . less than the cost of an air mail stamp! FOX RIVER PAPER CORPORATION, 403-G S. Appleton St., Appleton, Wis.

All-Rag ... ONLY Cent MORE PER LETTER

ANNIVERSARY BOND

A FOX RIVER Nasterline PAPER

(Continued from page 242)

tissue papers, rope and jute papers, technical papers, gummed papers, tags, pin tickets and marking machine tickets, glazed and fancy papers, and unprinted single weight crepe paper in folds.

(Amendment 20 to Maximum Price Regulation No. 129.)

#### FIBRE BOARD STORAGE FILES

Incident to the restrictions on paper board materials, Diebold, Inc., Canton, Ohio, has developed a new line of storage files utilizing a tough, smooth, hard surfaced fibre board (not corrugated),



Diebold's New Storage File

which is said to be exceptionally moisture resistant and durable. They are named the Fibre Stak Files, and are available in letter, legal, check, tabulating card and other standard sizes. Files are shipped unassembled, all hardware being furnished for assembly and stacking.

# L.O.L-13-a NOW INCLUDES WIDER VARIETY OF METAL FURNITURE

The scope of Limitation Order L-13-a has been broadened to include a wider variety of metal furniture and fixtures, the War Production Board announces.

With certain exceptions, L-13-a as amended May 22, 1944, controls the production of any furniture and fixtures containing more than 5 percent of metal by weight, other than the minimum essential amount of iron and steel required for nails, nuts, bolts, and other joining hardware, and other than casters and upholstery springs. Manufacture of items falling within this classification, except as noted below, is not permitted under the terms of L-13-a.

In addition to the types of metal office and industrial furniture and fixtures previously controlled by the order, school furniture, theatre seats, swivel chairs, as well as numerous other items not specifically listed in the order, are now controlled by L-13-a.

Not controlled by the order are time card racks (subject to L-54-c), medical and surgical furniture and related equipment (as defined in L-214, Schedule III), dental equipment, laboratory furniture, metal drafting tables, metal doors, metal door frames, and metal shutters (subject to L-142), metal household furniture

subject to L-62), or graphic arts machinery (subject to L-326).

The items previously permitted to be produced for general industrial, commercial, and office use are still permitted to be made for those purposes. The items are: wood filing cabinets containing not more than two pounds of essential operating steel hardware per drawer; wood typewriter desks containing metal typewriter mechanisms; steel seating equipment designed for use at a workbench or production machine; steel work benches where required for safety, steel foremen's desks, shop boxes, stacking boxes, tool cases, and tool room shelving inserts.

The previous provisions concerning production for preferred orders remain unchanged.

#### BASIS OF FOUNTAIN PEN QUOTAS USED BY WPB

The formulas used by the WPB covering the production and delivery quotas for civilian and special orders established by the April 1 amendment to fountain pen and mechanical pencil order L-227, are as follows:

For fountain pen manufacturers located in Group III and IV labor areas.—No ceiling was placed on production or shipments by small or large manufacturers to fill special orders (including military orders).

For civilian orders, small manufacturers (those who produced less than 100,000 fountain pens in 1941) were assigned quotas equivalent to 100 percent of their 1941 production.

Large manufacturers (those who produced more than 100,000 fountain pens in 1941) were permitted to produce and ship to civilians 50 percent as many pens as they produced in the base period, or 100,000 pens, whichever is greater. This formula could not be followed for one large manufacturer because of the extent to which the facilities in his plant are being used for war work. Instead, the formula used for large manufacturers in Group I and II labor areas was applied.

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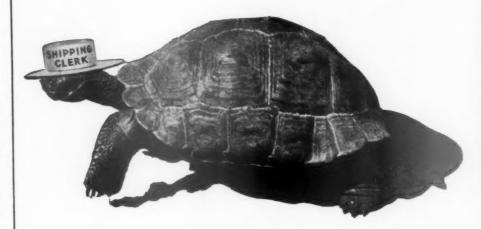
For fountain pen manufacturers located in Group I and II labor areas.—Quotas assigned to small manufacturers for civilian special orders combined total 100 percent of their 1941 production. Separate quotas for civilian and special orders were established in relation to the manufacturers' previous shipment patterns.

For civilian orders, large manufacturers were assigned quotas equivalent to 30 percent of their base period production. For special orders, larger manufacturers were permitted to produce pens to the extent that their quarterly quotas for civilian and special orders combined would not exceed their total production in the fourth quarter of 1943.

For mechanical pencil manufacturers in Group III and IV labor areas.—The formula for production and shipment quotas for mechanical pencils is the same as for fountain pens. The same large manufacturer to whom the formula for fountain pens was not ap-

(Continued on page 246)

# Are slow deliveries driving you crazy?



# Here's one less headache for Purchasing Agents

Orders for Webster's famous Carbon Papers and Typewriter Ribbons are delivered promptly. Warehouse stocks are strategically located in Chicago, New York, Philadelphia, Pittsburgh, San-Francisco and Cambridge, Massachusetts. 85% of the orders sent to these branches are shipped within 24 hours of receipt.

No priorities to worry about and *no shipping delays* when you order MultiKopy and Star Brand

Typewriter Ribbons, MultiKopy Carbon Paper, and the famous Micrometric Carbon Paper—with the printed scale on the white edge for accurate spacing at a glance.

Webster also makes carbon papers for gelatine hektograph and spirit process duplicating machines; carbon paper ribbons for photo-offset work; ribbons and carbons for all Elliott-Fisher, Addressing, Adding and International Business Machines.

For Service and Samples Write:

# WEBSTER'S

7 Amherst Street, Cambridge 42, Mass.

CARBON PAPERS and TYPEWRITER RIBBONS

Factory branches: New York, Philadelphia, Chicago, Pittsburgh, San Francisco



Are the hours in a business day too short for the amount of work you have to do? Then the Edison Electronic\* VOICE-WRITER was made for you!

This electronic "secretary-in-a-microphone" will speed the tempo at which letters, memos, orders and ideas move out of your mind into action. It will save your time and your secretary's time—give you both extra hours a day for productive accomplishment.

The Edison Electronic VOICE-WRITER will do other things, too. It will "take down" conversations, interviews, telephone calls on the spot—make them a matter of record and avoid mistakes and misunderstandings.

With War Production Board approval, the Edison Electronic VOICEWRITER is now available for some commercial use. Let your secretary mail the convenient coupon below—and an Ediphone representative will be glad to give you all the facts.

\*Based upon electronic principles discovered by Thomas A. Edison in 1883.

VOICEWRITER Ediphone

Thomas A.	Edison, Inc.,	Dept	P-7,	W. Ora	nge, N. J.**
tronic Voic	like to know EWRITER and operation.	more how	about it can	the new save time	Edison Elec- and stream-

line business operation.	08/11/1
Name	
Address	
Company	

60 In Canada, mail this coupon to Thomas A. Edison of Canada, Ltd., 610 Bay Street, Toronto 2, Ont.

(Continued from page 245)

plied was the only one to whom this formula was not applied. Instead, the formula for large manufacturers in Group I and II areas was used.

For mechanical pencil manufacturers in Group I and II labor areas.—The formula for production and shipment quotas for small manufacturers of mechanical pencils is the same as for those of fountain pens.

For civilian orders, large manufacturers were assigned quotas equivalent to 10 percent of their base period production. For special orders, they were permitted to produce pencils to the extent that their quarterly quotas for civilian and special orders combined would not exceed their production in the fourth quarter of 1943.

In general, these formulas have proved satisfactory, though adjustment of some large manufacturers' quotas for special orders has been found necessary, WPB officials said. In making such adjustments, production in the first quarter of 1944 has been used as a measuring stick instead of that in the fourth quarter of 1943.

Military requirements for fountain pens are expected to total more than 2,000,000 a quarter, IAC members were told.

# CONTROLLER FOR CONTINUOUS FORMS IN MULTIPLE COPIES

Feeding and aligning mechanism known as the Egry Controller, which enables addressograph to use continuous forms in multiple copies, is announced by The Egry Register Co., Dayton, Ohio. The controller is driven by an independent motor and when affixed to the addressograph, feeds the Egry continuous forms in perfect alignment at a speed synchronized with the movement of the addressograph platen. By the use of an automatic carbon ribbon device the system eliminates the use of one-time carbons. The controller is quickly and easily detached and requires no change in the construction or operation of the addressograph.

# COMPOSING AND TYPESETTING EQUIPMENT ADVISORY COMMITTEE FORMED

The Office of Industry Advisory Committees, War Production Board announces the formation of the Composing and Typesetting Equipment Industry Advisory Committee. David B. Fell, Printing and Publishing Division, has been appointed the Government presiding officer.

Members of the committee are:

E. P. Hamilton, Hamilton Mfg. Co., Two Rivers, Wis.; Lee C. Hammond, Hammond Machinery Builders, Kalamazoo, Mich.; Philip P. Merrill, Ludlow Typograph Co., Chicago; George F. Morrison, Milwaukee Saw Trimmer Corp., Milwaukee, Wis.; John W. Reid, Mergenthaler Linotype Co., Brooklyn, N. Y.; Walter A. Sittig, H. B. Rouse & Co., Chicago; E. J. Thompson, Thomp-

son Cabinet Co., Ludington, Mich.; E. O. Vandercook, Vandercook & Sons, Chicago, and H. G. Willnus, Intertype Corporation, Brooklyn, N. Y.

#### TYPEWRITER APPLICATIONS PROCESSED BY WPB FIELD OFFICES

Applications covering the purchase of all typewriters may now be filed and processed in War Production Board field offices, WPB advises in announcing amendments to Limitation Order L-54-a. Previously all such applications had to be processed in Washington.

The Amendments provide that all applications be submitted on WPB Form

1319.

This action was taken in connection with the recent revocation by the Office of Price Administration of its rationing order covering the sale of type-writers.

It was pointed out by WPB officials that the new amendments to L-54-a will not increase the supply of typewriters available.

#### B. H. BADANES MADE MEMBER OF F. P. & M. P. W & R. I. A. C., O. P. A.

B. H. Badanes, vice president of Mc-Kesson & Robbins, Inc., has been added to the Fountain Pen and Mechanical Pencils Wholesalers and Retailers Industry Advisory Committee to the Office of Price Administration, that agency announced today.

The committee, appointed by the Administrator did not include a representative of the wholesale drug trade. The appointment of Mr. Badanes will round out the membership of the committee to include every important segment of the industry engaged in the distribution of fountain pens and mechanical pencils.

# FRIDEN CALCULATING MACHINE CO. ACQUIRES NEW YORK BUILDING

Carl M. Friden, president of the Friden Calculating Machine Co., San Leandro, Calif., announces that his company has acquired a five story building at 336 Madison Avenue, New York City, which has been renamed the "Friden Building". It will be used as headquarters for the New York branch office. The field management offices are located in the building which also includes a company operated service training school, a sales training school, modern streamlined show room and demonstration rooms. L. B. Taylor is field manager.

#### NEW STANDARD FOR TAG BOARDS AND FILE FOLDER STOCK

New standards of grades and weights of converted tag boards, dealer tag boards, and file folder stock have been established by the War Production Board's Paper Division in an effort to extend the (Continued on page 248)

# COTTON IS SUPERIOR IN PAPER

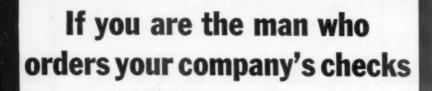
Through hundreds of years of paper making, no practical fiber has been found to equal cotton as the basic material for fine enduring paper. For many business purposes cotton fiber papers are the only practical, economical choice.

The cotton fibers in all of Parsons Papers give them a quality that adds appreciably to the efficiency with which "paper work" is accomplished. Parsons cotton fiber papers have a permanence that is especially important for long term records and documents. And, these papers "specialized for modern business" have an appearance that commands attention.

For nearly a century Parsons has specialized in Bonds, Ledgers, Index and Technical Papers made of strong, clean cotton fibers. To assure yourself of this quality specify them in your business.

Write today for Demonstration Folder of these superior business papers and see how they can be used in your business. Parsons Paper Company, Holyoke, Massachusetts

PAISONS PAIDEIP
Specialized for Modern Business



Do your checks

have these faults?

1derson Teacher in 5/100 POLLARS PORODRIATED, FOR 1EACHING FROM

NID AT THE RATE OF \$ 104.16

a Signature menor

Cashed for \$104.16; should have been \$99.16.

May 11 19 42

DOLLARS \$ 40/100

Signature

Appears to be for 40¢ instead of \$9.40. Cost 17 hours

COMPANY No 05693

John Stoveman.

G. Signature

Amount difficult to find in

CHICAGO NOV 7 1941

POLICY NO 62031

Signature

Three numbers on right end, no one of them the amount.

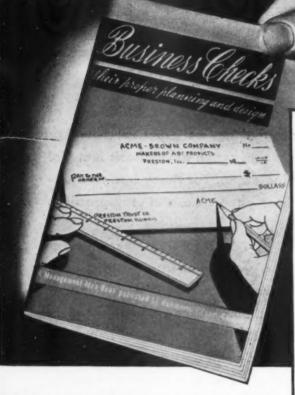
FREE!

Nº 17416

DOLLARS

osit Co

tracing error.



# This free book will help you avoid faults in check design that lead to costly errors

POORLY DESIGNED checks can lead to costly confusion in your bank account. This new Hammermill idea-book, "Business Checks," by John Y. Beaty, paper that truly protects gives you the specific inforyour checks are right.

It lists 15 common faults known name in paper. in check design and gives the 8 essentials of good business check design-all based

and conforming to recommendations of the American Bankers Association.

Businesschecks, to give satisfaction, must be on -Hammermill Safety. mation you need to be certain This paper is dependable in use, and carries the best

> Let the new Hammermill idea-book simplify the business check problem for you.

(Continued from page 247)

area of these grades of paper all in short supply, Charles Dynes, of the Paper Division stated.

An increase in area or yardage is expected to result from the simplification and standardization effected by amend-ments made to Schedule XVI of Limitation Order L-120, Mr. Dynes said. "In other words", he explained, "while the total tonnage of about 100,000 tons of these types of paper is all that can be produced this year from the pulp available, we hope that more paper by area can be made, and thus relieve the short-

As many specialty papers and paperboards as may properly be included will be brought under the control of this order to conserve pulp and paper, it was pointed out. Due to the continued shortage of labor, equipment and transportation, the situation in the pulp and paper industry was reported as becoming increasingly critical.

Specifically, the schedule now limits the grades, colors, weights, thickness, and sizes of specialty papers manufactured, although under certain conditions, the production of special grades is per-

#### J. B. WARD MADE VICE PRESIDENT OF ADDRESSOGRAPH

B. Ward, formerly sales agent, Addressograph-Multigraph Corp., has been made vice president, succeeding D. E. White who will assume a more active role in shaping company plans and policies in its domestic and foreign operations. Mr. Ward has been with the company 32 years.

# HORDER'S INC. ISSUES NEW CATALOG

Catalog of 288 pages, No. 50, listing a wide range of office supplies that the company expects to be able to supply during 1944, has been issued by Horder's Inc., Chicago, Ill. Other than as a buyer's guide, the book is of interest in that it represents a saving of 44% in paper stock over previous catalog issues.

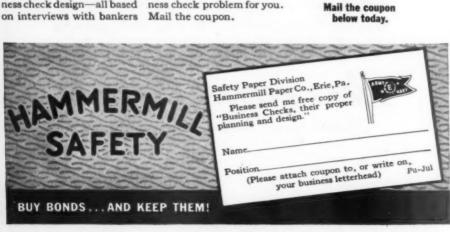
#### 1 1 1 SWIVEL CHAIRS

Swivel chairs have been removed from the controls exercised by General Conservation Order M-126, prohibiting the use of steel in more than 500 items of manufacture, the War Production Board announced.

The use of iron and steel in the manufacture of these chairs remains subject to Limitation Orders L-12-a and L-260-a.

#### COLUMBIA RIBBON & CARBON ADOPTS RETIREMENT PLAN

A retirement plan for its employees to supplement social security benefits and as a reward to old employees, has been inaugurated by the Columbia Ribbon & Carbon Manufacturing Co., Glen Cove, N. Y. The entire cost of the plan will be borne by the company and it is open to all employees 30 years of age or over



who have completed two years of service. Service with the armed forces is considered as service with the company if the employee returns within six months of his discharge.

### NATIONAL POSTAL METER CHANGES BUSINESS NAME

Commercial Controls Corporation is the new name of the National Postal Meter Co., Inc., Rochester, N. Y., manufacturers of metered mail machines, postal and parcel post scales, and various production control systems. It is felt that the new name is more descriptive of the company's broadened field of operations.

#### **OPA-WPB DIGEST**

Paper Conservation-WPB-Rex Hovey, director, WPB's Paper Division urged careful conservation and salvage of paper in all industrial and business enterprises.

Metal Office Chairs-WPB-Production of metal office chairs cannot be resumed in immediate future.

Prospective Publishers—WPB—Paper LO L-245 has been amended to permit a person who did no book publishing in base year 1942 to use maximum of five tons of paper per year for book publishing. This must be furnished from printer's paper quota under Order L-241.

Duplicating Limits Set-WPB-LO L-241 has been amended to include all duplicating process thus requiring reduction in paper consumption by all duplicating plants.

Carbon Forms-WPB-Continuous and interleaved carbon forms have been added to list of items scheduled under GSO M-293 as amended April 24.

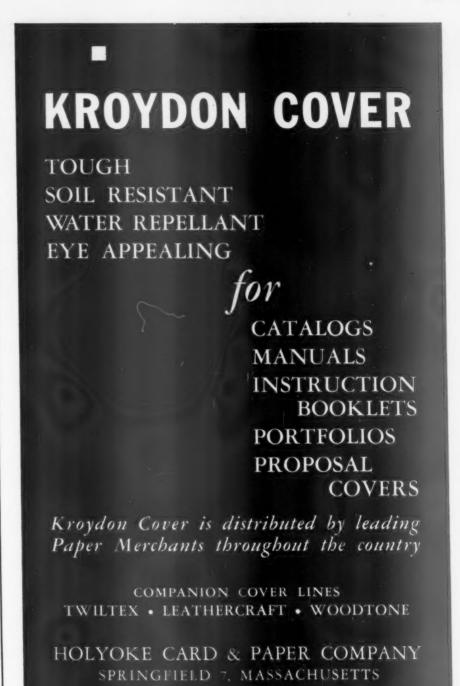
Wood Office Chair Advisory—WPB— Formation of Wood Office Chair Industry Advisory Committee with Frank S. Whiting, Consumers Durable Goods Division, as Government presiding officer was announced.

Metal Furniture Control-WPB-Scope of LO L-13-a has been broadened to include a wider variety of metal furniture and fixtures.

Paperboard Standards - WPB - New standards of grades and weights of converted tag boards, dealer tag boards and file folder stock were established by WPB's Paper Division.

Delegates Paper Authority-OPA-Authority to grant applications for ceiling price adjustments on printing and printing paper commodities were delegated to OPA regional offices.

WPB Appointments-Meiric K. Dutton was appointed assistant director of Printing and Publishing Division, Robert D. Ross, assistant director for commercial printing and Joseph A. Murray, chief of Distribution Section.



Write them for Specimens and Samples

KROYDON
COVER

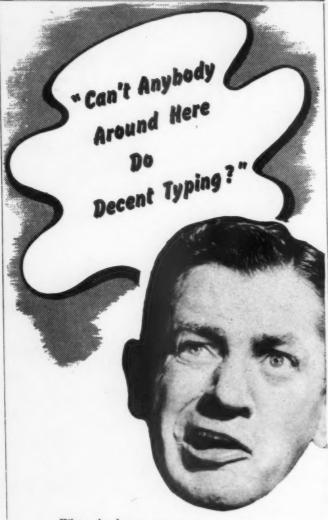
18

ALBANY
W. H. Smith Paper Corp.
ALLENTOWN
G. A. Rinn Paper Co.
B. F. Bond Paper Co.
BIRMINGHAM
Jefferson Paper Co.
BIRMINGHAM
Jefferson Paper Co.
BOSTON
Arnold-Roberts Co.
Storrs & Bement Co.
BUFFALO
Alling & Cory Co.
CHICAGO
James White Paper Co.
CINCINNATI
Chatfield Paper Corp.
CLEVELAND
Central Ohio Paper Co.
OLUMBUS
Central Ohio Paper Co.
DALLAS
Southwestern Paper Co.
DAYLON

HOUSTON
L. S. Bosworth Co.
KALAMAZOO
Bermingham & Prosser Co.
KANSAS CITY
Bermingham & Prosser Co.
LONDON, ONTARIO
United Paper Mills
LOS ANGELES
Zellerbach Paper Co.
MILWAUKEE
Dwight Bros. Paper Co.
MINNEAPOLIS
Wilcox-Mosher-Leffholm
Co.
MONTREAL, QUEBEC
McFarlane Sons & HodgSON

CLEVELAND
Central Ohlo Paper Co.
COLUMBUS
Central Ohlo Paper Co.
DATLAS
Southwestern Paper Co.
DATTON
Central Ohlo Paper Co.
DENVER
Carter, Bice & Carpenter
Paper Co.
DES MOINES
Pratt Paper Co.
DETROIT
Central Ohlo Paper Co.
GRAND RAPIDS
Carpenter Paper Co.
HAMILTON, ONTARIO
United Paper Mills
HARTFORD
ROURKe-Ene Paper Co.
J. L. N. Smythe

PITTSBURGH
Alling & Cory Co.
PROVIDENCE, B. I.
Storrs & Bement Co.
PORTLAND, OREGON
Zellerbach Paper Co.
RICHMOND, VA.
B. W. Wilson Paper Co.
ROCHESTER
Alling & Cory Co.
ST. LOUIS
Tobey Fine Papers, Inc.
ST. PAUL Tobey Fine Papers, Inc ST. PAUL Wilcox-Mosher-Leffholm ST. PAUL
Wilcox-Mosher-Leffholm
Co.
SALT LAKE CITY, UTAH
Zellerbach Paper Co.
SEATTLE. WASH.
Zellerbach Paper Co.
SPOKANE. WASH.
Zellerbach Paper Co.
SPRINGFIELD, MASS.
Paper House of New England
SAN FRANCISCO
Zellerbach Paper Co.
TOLEDO
Central Ohio Paper Co.
TORONTO. ONTARIO
United Paper Mills
WASHINGTON, D. C.
Barton, Duer & Koch
Paper Co.
WORCESTER
Storrs & Bement Paper
Co.



When the letters you type Give your boss cause to gripe; When the writing is blurry And the copies are furry; When such faults appear too much, It's time to switch to Old Dutch\*. Then impressions clean and legibly sharp, At which no boss can possibly carp. Will attend your work and earn you praise, If not, indeed, an outright raise.

OLD DUTCH CARBONS AND RIBBONS

enjoy word-wide recognition as superior products-thanks to the nearly half-century of quality controls employed in their manufacture.

> ASK YOUR OLD DUTCH CUSTOMER ENGINEER

# Waters & Waters Branch

511 LOCUST STREET, ST. LOUIS BURLINGTON, N. J. SAN FRANCISCO, CALIF.

# INDUSTRIAL WASTE PAPER SALVAGE 2,750,000 TONS IN 1943

MERICAN industry is doing a job of wastepaper salvage about equal to what households are accomplishing, the War Production Board announces. WPB estimated that of all the wastepaper salvaged in this country excluding that obtained from Government agencies, approximately 50 per cent is turned in by manufacturing concerns, business houses, stores and other commercial organizations.

Total wastepaper receipts at the mills last year totaled

6,060,000 tons. The goal for 1944 is 8,000,000 tons. "Industry salvaged 2,750,000 tons of wastepaper in 1943," said Herbert M. Faust, director of the WPB Salvage Division. "The paper was obtained from a wide variety of sources, ranging from printing and other plants whose raw material is paper, to collections of newspapers and magazines from trains at the end of their runs. The program is directed by the Industrial Salvage Branch, whose field force contacts thousands of plants throughout the country. In addition, about 8,000 leading industrialists and businessmen in 800 industrial communities are reaching 75,000 of the larger plants, with many offices and other establishments as additional participants in the effort."

Mr. Faust explained that the industrial wastepaper salvage work is conducted in the communities through volunteer committees. These groups have in their membership a representative of each main type of local industry and business, who is responsible for enlisting the support of all business concerns in his line. The individual plants appoint a plant salvage manager, who works with superintendents, foremen, office managers

'Like housewives and other folks, our business organizations have had to be educated to salvage waste-paper," said the Salvage Division director. "However, once convinced of the urgent need, and in a sense prompted by the spectre of curtailment in their own supply, American industry is doing a magnificent job of salvaging wastepaper.

Some plants are conducting contests among employees, Mr. Faust said. An Eastern business-form producer, for example, offered a prize of a \$25 War Bond to the person bringing the most paper from his home during one month, plus second and third prizes, in addition to a cash payment for the total each person brought in.

In a report to WPB, this company wrote: "In the normal operation of our business we accumulate a sizeable tonnage of wastepaper, which is baled and sold each month, but we wish to bring to your attention that the amount reported includes a toal of 42,730 pounds of wastepaper contributed by our employees.'

A Philadelphia manufacturer reported: "Seven or eight months ago when we received word of the necessity of paper salvage we went through our files and turned in about 20,000 pounds of wastepaper. We have just had a meeting at which it was decided to go through our files again, and obtained around 6,000 pounds of additional wastepaper."

A Chicago manufacturer of electric motors and generators wrote "Our company did not wait for your suggestion to scrap our old office records, since we do this to a certain extent every year. However, this year we took it more seriously and scrapped all of our records from 1910 to 1930. Maybe we should have continued on to 1935-but that is just a matter of opinion."

the name "Tension" meant envelopes with patented button and string fasteners (Tension Tie) which kept contents under tension and thus better protected in the mail.

Tension means better envelopes for every business need

including

CORRESPONDENCE
WINDOW
POSTAGE SAVER
CATALOG
TENSION TIE
METAL CLASP
EXPANSION
DUO-POST
BOOKLET
RETURN
FLAT MAILING
PACKAGING

# TENSION ENVELOPE CORP.

New York 14, N. Y. 345 Hudson St. St. Louis 3, Mo.\* 23rd & Locust Minneapolis 15, Minn.\*
500 South 5th St.

Des Moines 14, lowa 1912 Grand Ave. Kansas Cir 3, Mo.\*
19th & Cambell Sts.

ORIGINALLY BERKOWITZ SAVELOPE CO.

# PERSONALITIES in the NEWS

#### TEXAS COMPANY APPOINTMENTS

Greer W. Orton has been appointed Manager of The Texas Company's Purchasing Department following the elevation of the former Manager, W. F. Moore, to the post of Assistant to the Vice President (Administration), Foreign Opera-

In February, 1943, he returned to his former position with The Texas Company.

Robert S. Hatch was born in Boston, was graduated from Massachusetts Institute of Technology in 1927, and entered the employ of The Texas Company in

for the Tay Pike Oilwell Supply Company of Los Angeles. From 1917 to 1926 he was successively Stenographer, Invoice Clerk, Buyer and Assistant Purchasing Agent of the Ventura Refining Company of Los Angeles, and from 1926 to 1928 he was Buyer and Assistant Purchasing Agent for the California Petroleum Company, continuing as such when that organization became The Texas Company (California). In 1939 he was transferred to the Texas Company's New York Offices as Purchasing Agent.

Clyde S. Yerge, Purchasing Director, Oakland Public Schools, Oakland, Calif., was recently elected president of the California Association of Public Schools Business Officials.

W. L. Oswalt has been made General Storekeeper, Pennsylvania Railroad Co., vice R. C. Harris who has retired after 47 years of total service. Mr. Oswalt formerly was Assistant Stores Manager. Mr. Oswalt was employed by the Pennsylvania as a machinist's apprentice at Altoona in 1903, later being advanced from machinist and then stockman to numerous posts in charge of stores and materials. He was made Assistant Stores Manager at Philadelphia in 1943. W. W. Shugarts succeeds him as assistant stores manager.

Paul W. Fenton, formerly president of the Tulsa Association of Purchasing Agents while connected with the Tide Water Oil Company of that City, is now associated with the Arabian-American Oil Company at 630 Fifth Avenue, New York, N. Y.

S. E. Heyerick, formerly assistant to the late Walter H. Hallsteen, has been appointed Purchasing Agent of the Ilg Electric Ventilating Co., Chicago, according



Richard M. Morrison-Greer W. Orton-Robert S. Hatch

tions. At the same time, R. S. Hatch was named Assistant Manager of the Purchasing Department and R. M. Morrison was appointed General Purchasing Agent. All three men will continue to make their headquarters in New York.

Mr. Orton was born in Nacogdoches, Texas, and was graduated from the School of Business Administration, Texas University, in 1927. He began his business career as a Storekeeper for the Texas Power and Light Company and entered the employ of The Texas Company in August, 1928, in the Comptroller's Office in Houston. He became a Station Auditor in 1929 and late in that year was appointed a Traveling Auditor. In May, 1930, he was transferred to New York and for the next few years he performed auditing and plant inspection work in this country as well as in Central and South America, Africa, and the Orient. In July, 1938, he entered Texaco's Purchasing Department as Auditor of Purchases and subsequently became Assistant to the Manager-Administrative. In June, 1942, he was loaned to the Petroleum Administration for War as Director of Materials, Materials Division. July of that year in the Terminal Division, Refining Department. A few weeks later he was transferred to the Engineering Department, Port Arthur Works, Port Arthur, Texas, and remained there until September, 1930, when he was assigned to the Sales Department at Norfolk, Virginia, as Construction Engineer. In May, 1931, he was transferred to the Refining-Engineering Department in New York and returned to Port Arthur in May, 1933, as Assistant to the Assistant General Superintendent. In July, 1938, he joined the Purchasing Department and was named Assistant to the Manager in April, 1939. In January, 1943, he was appointed Chairman of the Material Subcommittee for District One, Petroleum Industry Committee, and still serves in that capacity on a part-time basis.

Richard M. Morrison, also a native of Boston, attended schools in California and began his career in 1914 as a roust-about in the California oil fields. Later he became Assistant to the Purchasing Agent and General Storekeeper for the Montebello Oil Company of Fillmore, California. In 1916 he became Shipping and Receiving Clerk and Buy-Out Man



to a statement released by J. M. Frank, President.

Born in 1907 at Norway, Heyerick at-(Continued on page 254)

# STANDARD Carbolog Blanks



For convenience, economy, flexibility, many plants maintain a basic stock of standard Carboloy Blanks in their tool cribs for rapid brazing to tool and cutter shanks. In this way your plant can be prepared to rapidly tool-up special jobs on a moment's notice. A worthwhile safeguard to provide for emergency tooling. Handy, too, for quickly repairing cutters damaged through accidental abuse, and for salvaging wornout high speed steel cutters.

Prompt deliveries from stock. Styles as shown, in wide range of sizes. For cutting steel, cast-iron, non-ferrous and non-metallics. Brazing instruction manual free on request. Training film strip also available, at print cost of \$3.50.

Be prepared for all requirements. Keep a stock of standard Carboloy Blanks on hand. Write for catalog GT-175.



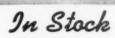
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Also available through 22 leading mill supply distributors



Scraper Blanks

Prompt deliveries. Styles as shown. Wide range of sizes.

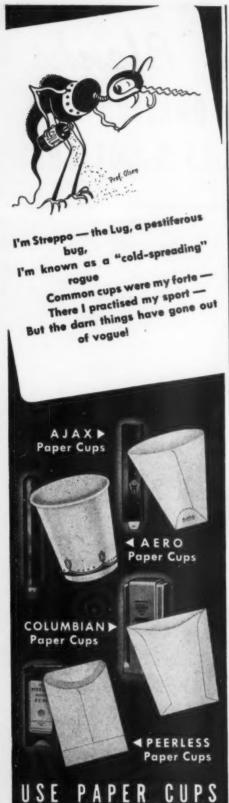


CARBOLOY



FOR CUITING STEEL

TUNGSTEN CARBIDES  $\star$   $\star$   $\star$   $\star$  Tungsten carbides with tantalum and/or titanium carbides



LOGAN DRINKING CUP COMPANY
68 Prescott Street, Worcester 5, Mass.

PACIFIC COAST ENVELOPE COMPANY
416 Second Street, San Francisco 7, Calif.

Divisions of
UNITED STATES
ENVELOPE CO.
13 Plants from Coast to Coast

(Continued from page 252)

tended night school in Chicago to earn his high school credits while working at Carson, Pirie, Scott and Company.

In April, 1924 he became associated with the Ilg organization, serving in the Engineering Department. Six years later he was transferred to the Purchasing Department where he was an assistant to Walter Hallsteen until the latter's death in January, 1944.

At the Ilg plant, Heyerick is a member of the Ilg Welfare Club, a company management group, and also the Ilg Advertising Committee. For the past several years he has been a member of the Chicago Association of Purchasing Agents. He is married and father of a seven year old daughter.

Ralph F. Merriam is now Purchasing Agent for the Cleveland Co-operative Stove Company and its divisions—Grand Home Appliance Company and Cleveland Foundry Company. Mr. Merriam succeeds Victor H. Gordon who is now with the armed forces. He has been associated with the Grand Home Appliance Company for the past nine years, being Assistant Purchasing Agent the last two years.

J. G. Bennett has been elected a director of the H. J. Heinz Company, Pittsburgh, Pa., and will be in charge of the Purchasing Department. He succeeds E. P. Goetz who has retired because of ill health after serving the company 33 years.

Leo Florentino, for many years Purchasing Agent of the P. Lorillard Co., is a member of a stock brokerage firm in New York City operating as Kinkhead, Florentino & Company.

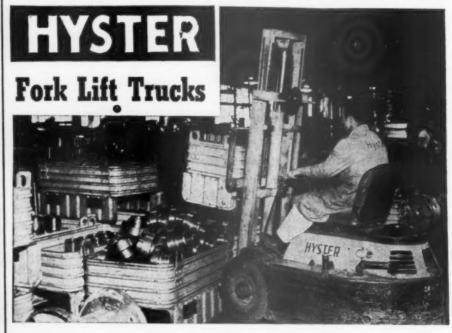
George S. Forbes has been made Purchasing Agent for the Century Electric Company, St. Louis, Mo. Formerly he was Assistant Purchasing Agent. Mr. Forbes succeeds George T. Prosser, Chief



Purchasing Agent for the past three years, who passed away recently. He had been with the Century company 27 years. W. F. Freese has been advanced from the head of the Priority Division to Assistant Purchasing Agent.

J. M. McCullough. Purchasing Agent and personnel manager of the Pennsylvania Salt Manufacturing Co., has

(Continued on page 256)





In the crowded isles of work-congested factories the compactness and maneuverability of the HYSTER 20 Lift Truck solves the problem of moving parts in process through the plant. And on pneumatic tires it goes places and does things impossible for other trucks.

For detailed information send for catalog 673.

## HYSTER COMPANY PORTLAND 8, OREGON PEORIA 1, ILLINOIS

SALES & SERVICE OFFICES—221 No. LaSalle St., Chicago 1, Ill.; 90 West St., New York 6, N.Y.; 1022 Denrike Building, Washington, D. C.; 233 Ninth St., San Francisco 3, Cal.; Masonic Bldg., New Orleans 12, La.; 2724 First Ave. S., Seattle 4, Wash.; 2700 Santa Fe Ave., Los Angeles 11, Cal.

# Are you troubled with useless inventory?

Large surplus inventories will be a heavy drag on your future operations. When conversion time comes, will you be light on your feet and ready — or will you be penalized with heavy, awkward surpluses of useless stock?

One way to beat the excess inventory problem is to buy more of your present steel requirements from warehouse. By buying only what you need for immediate production, you avoid leftovers and dead stock when

cancellations, cutbacks or design changes occur. Frasse stocks of cold finished bars, tubing, stainless steel, alloy, and aircraft steels and tubing are now in good shape. By ordering from Frasse as you go, there's no surplus bogey to fear on cancellation day.

Why hamper your future operations with heavy, unwieldy surpluses that can be prevented? Start reducing yours today by using Frasse steel inventories instead.

HAPPY BIRTHUAY
TO SARGE

SEAMLESS MICHANICAL AND AIRCRAFT SPEELS

SEAMLESS MICHANICAL AND AIRCRAFT TUBING • COLD FINISHED BARS • ALLOY STELLS

Peter A. Frasse & Co., Inc. 17 Grand Street, New York 13, N. Y. (Walker 5-2200) • 3911 Wissahickon Avenue, Phila. 29, Pa. (Radcliff 7100 = Park 5541) 50 Exchange Street, Buffalo 3, New York (Washington 2000) • Jersey City, N. J. • Hartford, Conn. • Rochester, N. Y. • Syracuse, N. Y.

AIRCRAFT STEELS . DRILL ROD . STAINLESS STEELS AND TUBING . COLD ROLLED STRIP AND SHEETS . WELDED STEEL TUBING



M.S.A. Faceshields, with tilting visor and hard fiber headgear of a special design, guard the worker's face against light flying particles, and provide unexcelled wearing comfort. Adjustable headgear has visors of first-quality, clear cellulose acetate, in 4", 6" and 8" lengths, in .020", .040", and .060" thicknesses. Green visors are furnished in light or dark shades in .020" thickness only. Three separate headgear types available: without sparkguard, or with full or semi-sparkguard. Write for complete description in Bulletin No. CE-23.

#### PREFORMED HEADGEAR

With crown strap supporting weight of the assembly, headgear has been designed to fit the natural contours of the head, without pressure points, assuring top wearing comfort throughout every working shift.

# \*

#### CHECK THESE FEATURES

- 1. Crown strap conforms to natural shape of head . . . no tension or binding at forehead, sides or back of head.
- Headgear is equipped with padded, genuine leather sweat bands, remain soft and flexible for better forehead comfort.
   5.
- Finger-control friction joints permit quick and positive adjustment of tension for tilting visor and sparkguard.
- Single adjustment knob at rear controls simultaneous adjustment of crown strap and headgear to provide perfect fit.
- 5. Visor is held securely in place by special visor attachment, which permits speedy and simple replacement on the job.



#### MINE SAFETY APPLIANCES COMPANY

Braddock, Thomas and Meade Streets, Pittsburgh 8, Pa.

District Representatives in Principal Cities

(Continued from page 254)

been busy getting deferments for essential men in the Penn Salt plants in Tacoma and Portland, but recently was called for a physical by his own draft board, says the Washington Purchasing Agent and Manufacturer. In fact, in the same mail with his draft notice was a deferment for an entomologist with the company which he had obtained from the same board.

Major Clarence Baker, Royal Canadian Artillery Overseas, formerly secretary of the Purchasing Agents Association of Vancouver and Purchasing Agent for the Boeing Aircraft Company of Vancouver, has been appointed to the staff of General Sir Bernard L. Montgomery.

Paula L. Bendigo is Purchasing Agent for Saylor-Beall Manufacturing Co., makers of spray equipment, tire pumps and portable and stationary air compressors, Detroit, Mich.—now making aircraft parts. The company operates a



plant at St. Johns, Mich., the Triangle Engineering Company. Procurement is centralized at the Detroit plant, and that's where Miss Bendigo comes in. She has been with Saylor-Beall a year as Assistant Purchasing Agent and in January of this year was made Purchasing Agent. She says "It's not an easy task for a woman, but I am a very determined person and with me there is no such word as can't." But, more to the point she declares "Women today are just as capable of handling a man's job as a man is and in some cases even more so." way, the company reports that she is doing a wonderful job as Purchasing Agent.

Leslie Deal has been made Purchasing Agent for the Pacific Machinery & Tool Co., Portland, Oregon. Formerly he was Purchasing Agent for the Morrison-Knudsen Company, Boise, Idaho.

Josephine L. Ryan. Purchasing Agent for the Seattle Times, Seattle, Wash., is now in training as an overseas staff assistant with the American Red Cross in Washington.

J. R. Keach, Purchasing Agent, Ohio Rubber Company is now associated with Firestone Industrial Products, Akron, Ohio, in charge of post-war planning for

(Continued on page 260)

## CONTINENTAL CAN COMPANY, Inc.

announces formation of a

# PLASTICS DIVISION

Addition of the Reynolds Molded Plastics facilities to new laminated plastic department rounds out service for supplying industry needs

To assure customers of complete facilities in its plastic operations, Continental Can Company, Inc., has acquired the Reynolds Molded Plastics division of Reynolds Spring Company. In addition, Continental has a substantial interest in Marco Chemicals, Inc., producers of MR resins used in the laminated plastic "Marcolite."

To meet the increasing needs of industry now and after the war, Continental has combined its vast research and engineering facilities with those of its new acquisitions. The result is a complete new Plastics Division, fully equipped to handle widely diversified plastic requirements.

The Molded Plastics Department is turning

out plastics for a variety of products by compression, extrusion, injection and sheet-forming. Reynolds Molded Plastics—a peacetime producer of plastic parts in the automotive, refrigeration, appliance and other fields—is in Cambridge, Ohio. One of the most modern plastic plants in the United States, it has both ample production capacity and strategic location. It is now turning out important parts for bomber and fighter aircraft.

The Laminated Plastics Department produces the new thermo-setting contact laminate, "Marcolite." This sturdy, light-weight plastic is fabricated in Continental plants in Chicago and Jersey City.



#### CAN COMPANY, INC.

MOLDED PLASTICS:
Reynolds Molded Plastics - Cambridge, Ohio

LAMINATED PLASTICS:

Continental Can Company, Inc. - Chicago New York - Los Angeles Continental's Plastics Division is engaged mainly in wartime research and manufacture now. But we're also planning for peacetime products. If you have the necessary priority now or are planning post-war products, we'll be glad to help.

LAMINATION . COMPRESSION . INJECTION . EXTRUSION . SHEET FORMING

CAST STEEL ... 1901



"Reading" Cast Steel Valves and Fittings are made by an organization that has devoted its whole life to developing pressure steel castings—castings finished into valves and fittings in accord with designs for high temperature service.

NGINEERING SPECIALTIES .... 1870

"Pratt & Cady" patents for brass and iron valves, now expired, show its participation in early developments of the valve industry—particularly the development of renewable features.

"D'ESTE" was an original manufacturer of reducing valves and pressure regulators—introducing the piston internal pilot control type.

Thus, Reading-Pratt & Cady offers you a single source for your valves. Whether they be of cast steel, brass or cast iron, or whether they be manually operated gates, globes, checks, et cetera, or automatically controlled regulators—they are made by an organization experienced, tooled and manned for the production of its particular type of valve, but each able to give you every advantage of the best thinking of the others. You get better valves through R. P. & C. specialized production.

READING-PRATT& CADY

BRASS & IRON VALVES ... 1878

MANUFACTURERS OF

READING CAST STEEL VALVES AND FITTINGS . PRATT & CADY BRASS AND IRON VALVES
D'ESTE VALVE AND ENGINEERING SPECIALTIES

Reading, Pa., Atlanta, Boston, Chicago, Denver, Houston, Los Angeles, New York, Philadelphia, Pittsburgh, San Francisco

A DIVISION OF AMERICAN CHAIN & CABLE COMPANY, Inc., BRIDGEPORT, CONNECTICUT



## Where have you seen THIS face before?

IT'S a familiar face—the honest face of a good instrument. You have looked at it on boilers, compressors, tanks—innumerable places where proper, safe operation depends on accurate pressure indication. It was chosen in many cases by manufacturers who knew that the success of their

products rested in no small part on the truthfulness of its pressure or vacuum indication.

Often that face is the face of a veteran—a gauge that has been at it a long time, operating under tough conditions. But as you trace back over the Marsh Gauges you have known, can you recall a single one of them that has ever failed to do its job right?

To build such a gauge requires more than good design and construction. It takes a great fund of praction.

IARS

tical knowledge to guide that design—knowledge that can be acquired only in the vast proving ground of industry. It takes the kind of knowledge of every conceivable service condition that Jas. P. Marsh Corporation has been accumulating for more than 75 years.



The Gauge with the "RECALIBRATOR"

"RECALIBRATOR"

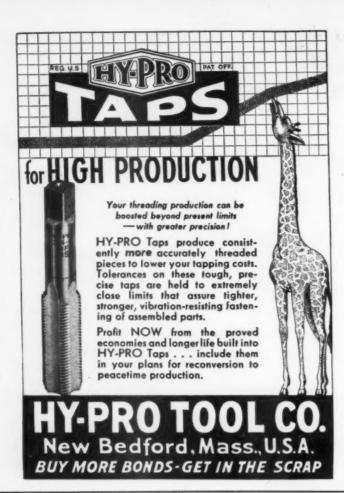
A gauge built to Marsh Standards is not likely to be knocked out of adjustment. But II it is, the Marsh "Recalibrator" will quickly restore its accuracy. Simply turn the "Recalibrator" screw until the pointer is at zero when not under pressure. The gauge will then be right at all points on the dial. Unlike other methods of re-setting, the "Recalibrator" gets at the root of the error — re-establishes the relation of the bourdon tube to the movement — actually re-calibrates the gauge.

The accuracy and stamina that you have come to associate with Marsh Gauges is found in all Marsh products — Dial Thermometers, Recorders, Heating Specialties. Naturally, when U. S. Industry went to war, Marsh Instruments were given vital assignments for which their great record so well qualifies them. There is a Marsh Instrument for practically every pressure or temperature measurement requirement.

JAS. P. MARSH CORPORATION 2054 Southport Avenue. Chicago, Illinois

## GAUGES

DIAL THERMOMETERS \* RECORDERS \* HEATING SPECIALTIES



A HALF GENTURY

## SIMONDS for GEARS

Since 1892

Still making good gears, after 51 years of service to industry. A year more than a half century of experience in the manufacture of all types — spur, bevel, mitre, worm, rack, internal, etc. Also gears made to your order. In addition SIMONDS distributes Ramsey Silent Chain Drives and Couplings.

THE SIMONDS GEAR & MFG. CO.

25th and Liberty Sts. PITTSBURGH, PA.



Make sure that small parts, accessories and replacements are on the spot when needed by putting them in a Chase Red-Tye Parts bag and attaching them right to the product. Avoid irritation and loss of time caused by overlooked or mislaid parts.

Chase Red-Tye Parts bags are available in many types and sizes ... with or without tags or envelopes attached for letter, invoice or instruction sheet.

> Write for samples and prices. Also inquire about Chase Red-Tye mailing bags . . . for the quick, safe delivery of small replacement parts.

CHASE BAG CO.
302 EAST PITTSBURGH AVE., MILWAUKEE, WIS.
ONE OF THIRTEEN GREAT FACTORIES

(Continued from page 256)

Firestone plants manufacturing rubber and plastic products other than tires.

Arthur Maquire has been made Director of Stores, according to announcement by Commissioner Albert Pleydell, Department of Purchase, New York, N. Y.

Raiph Wood, Purchasing Agent for the Brunswick Pulp and Paper Co., Brunswick, Ga. recently resigned. He had been with the company six years, first in the capacity of plant engineer and later as Purchasing Agent.

Joseph F. Bode was elected Vice President in Charge of Purchasing, Briggs & Stratton Corp., Milwaukee, Wisc., at a recent election of officers, and Gordon J. Bell was elected vice president in charge of production.

James L. Kelty, Purchasing Agent, General Seafoods Corp., Boston, has been appointed Purchasing Director of one of the General Foods Corporation units at 383 Madison Avenue, New York, N. Y.

Joseph L. Travers. Assistant Purchasing Agent, General Seafoods Corp., Boston, Mass., has been appointed Purchasing Agent, succeeding James L. Kelty.

Frederic B. Woodward has been named Purchasing Agent of the Sheppard Envelope Co., Worcester, Mass.

W. Herschell Skinner has been appointed Assistant Purchasing Agent, Perfect Circle Co., Hagerstown, Ind.

Robert Van Winkle is now Purchasing Agent of the Perfect Circle Company's Richmond, Ind., plant, succeeding W. Herschell Skinner.

Harold Dent formerly Purchasing Agent for the Meeker Mfg. Co., Joplin, Mo., is now Purchasing Agent for the Wright Specialty Co., St. Louis, Mo.

E. C. Foster is now Purchasing Agent for the Worcester Pressed Steel Co., Worcester, Mass. Formerly he was Purchasing Agent for the Waltham Watch Company.

Carl M. Riefkin, honorary member of the Purchasing Agents Association of Cincinnati, former editor of the Cincinnati Purchasor and who served several terms as secretary of the Association, was recently appointed General Manager of Sales for the Andrews Steel Company and The Newport Rolling Mill Company.

John M. Brown. Director of Purchases, Veeder-Root, Inc., Hartford, Conn., spoke on the subject "The Salesman Today as the Purchasing Agent Meets Him", at a recent meeting of the Providence Sales Managers Club.

Raymond Stamets, Purchasing Agent for the Ingersoll-Rand Co., Phillipsburg,

(Continued on page 262)



Out where fighting Yanks attack, big howitzers pummel the enemy. But shells that pack a deadly wallop are too heavy for men to lift.

So a crane—rigged with <u>Preformed</u> wire rope—hoists the shell, then shoves it home. Every second counts. That's why the rope is <u>Preformed</u>. It lasts longer than ordinary wire rope. It handles

faster and easier, speeding every operation. And it prevents accidents, too, because it's safer.

On the firing line—as on the production line— Preformed is proving that it's the tough wire rope for the tough war jobs.

On practically all kinds of mobile equipment, Preformed is back of every attack.



MORRISTOWN, N. J.

(Continued from page 260)

addressed the Easton (Pa.) Exchange Club on "Problems of a Purchasing Agent".

R. L. Grube, Purchasing Agent, Stephens-Adamson Manufacturing Co., Los Angeles, Calif, is instructor for class studying "Purchasing For War Industries" being held under direction of the War Training Office, University of Southern California.

L. E. Arnold succeeds H. T. Ford as Purchasing Agent of the Lone Star Cement Corporation, Dallas, Texas. has been with the cement company for 17

Harry Huls, former Purchasing Agent, Armour & Co., Forth Worth, Texas, is now a member of Uncle Sam's Navy.

E. H. Weaver, Assistant Manager of Purchases, Union Oil Co., Los Angeles, Calif., has been transferred to San Francisco. "Buck" says the Washington Purchasing Agent and Manufacturer, now enjoys the distinction of being affiliated with three Purchasing Agent Associations-Washington State, Los Angeles, and Northern California.

#### AMONG THE COMPANIES YOU BUY FROM

Clinton E. Swift has been named assistant manager of the Engineering and Research Dept. of Eutectic Welding Alloys Co., New York.

Henry D. Engelsman has been appointed sales manager and technical service



supervisor of the Metallizing Co. of America, Chicago.

Westinghouse Electric and Manufacturing Co. has elected four new vice presidents: R. A. Neal, manager, Switchgear Divn.; J. K. B. Hare, manager, central district sales activities; John H. Ash-Appliance Divn.; and H. H. Rogge, manager, company's Washington Government Office. Mr. Neal becomes vice president and sales manager. Duties of the other men are unchanged. Another vice president, R. A. McCarty, in charge of the company's subcontracting activities, has been granted a leave of absence to

(Continued on page 264)

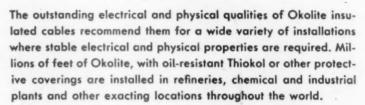
# WHY OKOLITE INSULATED CABLES ARE RECOMMENDED FOR INDUSTRIAL CIRCUITS

Corrosion resistant Okoloy-coated copper conductor.

Okolite heat and moisture resistant insulation.

Cable tape.

Outer covering (Saturated braid or Thiokol or Okoprene oil-resistant sheath.)



Electrical Properties: Okolite's electrical qualities include:

- Stable insulation resistance
- High breakdown voltage
- Low dielectric loss
- Low specific inductive capacity

The dielectric constant of Okolite is guaranteed not to increase over 5% after 14 days immersion in water nor will it exceed a 2% change between the 7th and 14th day of such immersion. This high resistance to moisture permits Okolite cables to be installed without lead sheaths in wet locations.

Physical Properties: Physical properties of Okolite oil-base insulation include high resistance to heat — Okolite cables can be operated at copper temperatures up to 75°C. Their good aging qualities and long life have been established both by field installations and accelerated aging tests.

Okolite cables are more fully described in Bulletin OK-2007A. They are recommended for high voltage circuits, interior wiring, underground service, portable cables, apparatus and motor leads and many other uses. Write to The Okonite Company, Passaic, New Jersey.



OKONITE INSULATED WIRES AND CABLES

## HOLO-KROME

TRADE FIBRO FORGED MARK

## SOCKET SCREWS



# Completely Cold Forged



The Method (Patented, owned, controlled and exclusively used by Holo-Krome) is one of the major differences between a Socket Screw and a Holo-Krome FIBRO FORGED Socket Screw. It's Completely Cold Forged! Thousands of users attest to the many advantages of specifying "HOLO-KROME". Yes, it's the Method.

## **GUARANTEED UNFAILING PERFORMANCE**

THE HOLO-KROME SCREW CORP. HARTFORD 10, CONN. U.S.A.

(Continued from page 262)

assume an executive position in Washington with the Smaller War Plants Corp.

**G. S. Staunton** has been appointed assistant automotive sales director of Bendix Products Divn. of Bendix Aviation Corp., South Bend, Ind.

Bristol Company. Waterbury, Conn. has opened a new branch office in Houston,



Texas, which will be headed by D. D. Ault who has been resident sales engineer for a number of years.

George J. Cossmann has succeeded W. P. Hoagland, as vice president and central district manager for the Graybar Electric Co., New Yor. Mr. Hoagland has retired after having served the company 44 years.

**Lewis S. Hunt** has been named advertising manager of Signode Steel Strapping Co., Chicago.

H. L. Robinson has been appointed manager of the new Pittsburgh plant of Joseph T. Ryerson & Son, Inc., Chicago.

Maurice N. Trainer, first vice president of the American Brake Shoe Co. has

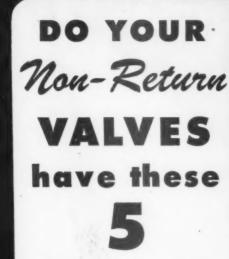


been elected a director of the company. Mr. Trainer has been with the firm since 1916 and was elected first vice president in October, 1943.

M. D. Bensley has been appointed general manager of the three plants at Mt. Vernon, Ill. of H. K. Porter Co., Inc., Pittsburgh. He has been most recently assistant to the president of Shenango Penn Mold Co. Mr. Bensley is a member of the American Society for Metals, and American Foundrymen's Association.

E. H. Gordon has been appointed coordinator of advertising of Western Cart-(Continued on page 266) NUMBER THREE OF A SERIES ON VALVE SELECTION

Here's how to buy a Non-Return VALVE



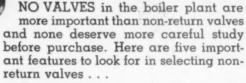
features?

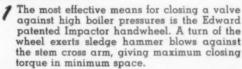


IMPACTOR HANDWHEEL



HOUR GLASS DISK-PISTON



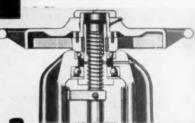


Edward hour glass disk-piston gives maximum flow area without sacrifice of operating dependability. Piston rings are heat treated and hardened EValloy stainless steel.

Companion to the Impactor handwheel in larger valves, the Edward patented EValthrust yoke bushing sets new standards for easy operation. Double combination angularradial ball bearings greatly facilitate tight valve closing.

Guiding is extremely important. Disks in Edward non-return valves are positively guided, without danger of hanging up, through three integrally cast and cored-out tear-drop design guide ribs and Edward seat guide lip.

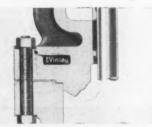
5 Newest plus-value feature in Edward top temperature non-return valve construction is EVinlay facing for bonnet nut surfaces to end possibility of nuts seizing or galling on bonnet flange. Also applied to stem bearing surfaces.



S EVALTHRUST VOK



GUIDE RIBS



5 EVINLAY FACING

Edward non-return valves are built in all sizes with either flanged or welding ends for pressures from 150 to 2500 lb sp.

It pays to specify Edward nonreturns for all steam pressure installations, from 150 lb upward. The valve above, rated at 300 lb, has all the desirable Edward

design features that mean low

cost operation at any pressure.

THE EDWARD VALVE & MFG. CO., INC. . EAST CHICAGO, INDIANA

EDWARD Steel VALVES

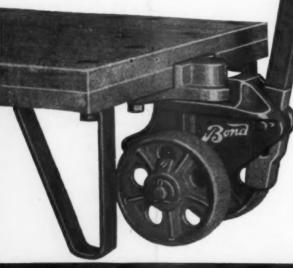


The Jack-for-All Trades!
BOND UNIVERSAL
LIFT JACK

Put this jack on the job and you increase the materials handling efficiency of every man-jack who uses it! The Bond Universal handles light or heavy loads . . . is adapted to factory, terminal, loading dock, warehouse, store or elevator . . . operates smoothly on broad floors or narrow aisles.

This improved lift jack couples and uncouples swiftly...turns quickly. Handle is adjustable to suit any operator's height... can be used in vertical position which permits easy storage in cramped quarters... can't drop and hit the floor. No springs... no pedals... no gadgets of any kind. It's simple ... trouble-proof.

Speed materials flow with the modern Bond Materials Handling System... and cut your costs while you're at it! Write today for free bulletin R-37.



BOND FOUNDRY AND MACHINE COMPANY MANHEIM, PA.

Manufacturers of Bond Builtfor-the-Job Industrial Truck Casters and Bond Power Transmission Equipment.

Bond UNIVERSAL LIFT JACKS-

(Continued from page 264)

ridge Co., East Alton, Ill. and its affiliated companies and divisions. In addition to developing retail sales and advertising plans for jobbers and dealers in various lines, he has written numerous trade paper articles on retail merchandising.

Dr. Joseph G. Davidson has been elected president of Carbide and Carbon



Chemicals Corp. and Carbide and Carbon Chemicals, Ltd. He participated in the early work in synthetic organic chemistry which led to the foundation of the company with which he has been connected during the last 12 years.

Julion A. Howks has been named eastern manager of the Appleton Electric Co., Chicago. He will make his headquarters in New York. Mr. Hawks until recently was chief, Electrical Section, Wholesale & Retail Trade Division, WPB.

F. W. Lee has been appointed field engineer in the Philadelphia district for the Norton Co., Worcester, Mass.

William Y. Turner has been appointed manager of the Washington offices of



Corneliussen & Stakgold, Inc., foreign sales representatives, New York City. Mr. Turner was formerly with General Motors and the British Ministry of Supply.

V. D. Sweeney has been appointed sales manager of the National Smelting Co., Cleveland. He has been with the company since 1936. Other appointments in the organization include James F. Donnelly Jr., eastern representative and A. C. Hamilton, Michigan representative.

R. H. Thielemann has been appointed development engineer for Allegheny Lud-

(Continued on page 268)



# Ready Now FOR YOUR Super CUTTING JOBS ... Super DBL HIGH SPEED STEEL

#### NO COMPLICATIONS IN HEAT TREATMENT OR HANDLING

For any shop man familiar with the techniques used on tungsten cobalt steels, or on the 18-4-1 and tungsten-moly analyses, there will be nothing new in the handling and treatment of Super DBL. It also conforms to standard in the forms and finishes available, which include regular sizes of mill-treated tool bits and can be supplied from Allegheny Ludlum warehouse stocks, as well as distributors, in principal cities coast to coast.

ALLEGHENY LUDLUM mill technicians developed this new High Speed Steel to fill a dual role: first, to meet government requirements for the conservation of strategic materials; and second, to give you a higher degree of hardness and cutting stamina than has been previously available in steels which meet the conservation need.

Super DBL (a low-tungsten, molybdenum, cobalt steel) has been thoroughly tried and tested in service—it's ready to take on your heaviest-duty production work. Use it on hard, gritty castings—on heat treated alloy or stainless steels—on any rough and tough cutting job in the shop with full assurance of

maximum red hardness and performance. For full data on properties, treatment and use, write for the "Super DBL Blue Sheet."

ADDRESS DEPT. P-24



.A-9074 . . . W&D

JU

# Bearing BALLS

## they can "TAKE IT"!

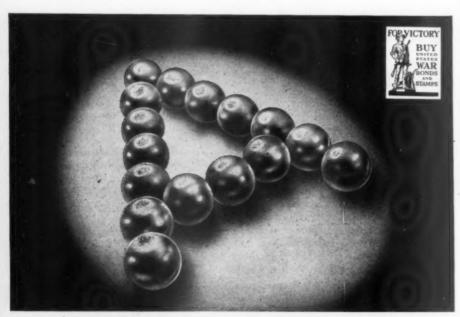
Every hour, millions upon millions of ABBOTT BEAR-ING BALLS are aiding war-time production by giving uninterrupted performance — they're carrying the load as planned.

If it's a job for a BEARING BALL — an intricate delicate mechanism, an average assembly or an extremely heavy duty job where stamina is of vital importance — ABBOTT can take it.

1300

35 years of practical knowledge backed by progressive manufacturing methods, guarantees to ABBOTT users BEARING BALLS that "can take it".

Be certain - specify "ABBOTT".



ABBOTT'S 35th YEAR



(Continued from page 266)

lum Steel Corp. Mr. Thielemann made developments in the high temperature creep-rupture testing technique and was active in developing methods for welding and fabricating stainless steels and other special alloy materials.

John M. KcKibbin has been appointed assistant to vice president, Westinghouse Electric & Mfg. Co. In addition to his



present duties as manager of the company's Application Data & Training Dept., he will be in charge of all product and industry advertising. Last year, Mr. McKibbin received the company's highest honor—the Order of Merit.

Hooker Electrochemical Co., Niagara Falls, N. Y., announces the following sales department appointments: Robert E. Wilkin, eastern sales manager; Lauren B. Hitchcock, manager of sales department; S. I. Anderson and S. F. M. McClaren, assistant eastern sales managers; Wm. F. George, New York district sales supervisor; Wm. H. Monsson, Midwestern sales supervisor.

E. E. Clark has been named president of the American Screw Company, Provi-



E. E. Clark



V. J. Roddy

dence, R. I. V. J. Roddy was promoted to vice president at the same time.

Eric Morrell has been appointed assistant to the president of the American Chain Ladder Co., Inc., New York. Mr. Morrell is widely known for his work in industrial research.

Edgar C. Thomas has been elected vice president of Thomas Machine Mfg. Co., Pittsburgh, Pa. He has been recently honorably discharged from the U. S. Army with the rank of major and re-

(Continued on page 270)



## SQUEEZ-GRIP

## \_\_ For Carbon Dioxide Is the Navy Standard

Most people think of fire extinguishing equipment in the terms of fire departments, hose, water and chemicals. But to the modern-thinking executive it is the extinguishing equipment that will put out a fire the quickest and with the least damage to materials, property and production. The SQUEEZ-GRIP valve originated by C-O-TWO, is now specified by the Navy Bureau of Ships. It is the most modern release for carbon dioxide portable extinguishers. Even an inexperienced person can operate the SQUEEZ-GRIP. No handwheel to turn; no need to set the extinguisher down. Nothing to do but squeeze the control lever over the carrying handle; aim the discharge horn at the fire; it is extinguished in split seconds—without damage to materials or equipment. SQUEEZ-GRIP Saves Time, Saves Gas, Saves Lives.

It's Ouicker, It's Faster.

## C-O-TWO FIRE EOUIPMENT COMPANY

NEWARK 1.

NEW JERSEY

Sales and Service in the Principal Cities of United States and Canada.

Ju

(Continued from page 268)

turns to the company founded by his father where he has spent his entire industrial career in various capacities.

H. V. Erben, has been elected a commercial vice president of General Electric



Co., Schenectady, N. Y. He has been with the company since 1917 and since 1941, has been manager of the Central Station Divisions.

R. D. Vickers has been placed in charge of plastics and chemical sales in the eastern region for the Goodyear Tire & Rubber Co. He will make his head-quarters in New York. His developments include thermo-setting plastics and adaptations of rubber condensation derivatives to wire insulation.

Dr. Laurence C. Hicks has been named metallurgical engineer and associate director of research in the Magnetic



Products Div. of the Allegheny Ludlum Steel Corp. Since 1936, Dr. Hicks has been conducting research on materials for the electrical industry, including siliconiron alloys for magnetic core materials.

Robert H. Ramage has been named advertising manager for the headquarters division of American Brake Shoe Co. in New York. Since 1939, he has been editor of the house organ, Brake Shoe

Elmer L. Weber has been appointed advertising and sales promotion manager of Paint Divn., Glidden Co., Cleveland, O.

SOURCES WANTED for Machine Screw Nuts by a Midwestern City Manufacturing Company. Write Box No. 958, PURCHASING, 205 East 42nd Street, New York 17, N. Y.



WIRE FORMS

ten the best springs we know how to produce . . . on time! Quality, dependability EXTENSION \* TORSION and strict adherance to our customer's FLATS \* COMPRESSION specifications has been our performance record. We'll continue this type of work for the duration and long after!

## THE U.S. STEEL WIRE SPRING CO.

7800 FINNEY AVE. . MICHIGAN 6318 . CLEVELAND



The Cleveland Cap Screw Company 2917 EAST 79TH STREET . CLEVELAND 4, ONIO Warehouses: Chicago, Philadelphia, New York, Las Angeles

MADE BY THE ORIGINATORS OF THE KAUFMAN PROCESS FOR GREATER STRENGTH AND ACCURACY

1

10

rs o.

en oe

## Recommended for Packaging Military Parts



hard continuous use proves TITE-SEAL Waterproof

Cellophane Bags perfect for packaging military parts. Approved Grade A, type III wrapping material in packaging Methods I and IA. Waterproof and airtight, military parts and supplies reach fighting fronts in TITE-SEAL Bags free from rust, dust and corrosion. Contents completely visible.

Delicate or fragile articles nested in our protective LOXTITE Partitions and the container heat-sealed in one of our TITE-SEAL Bags is THE packaging method many are seeking. Whatever your needs let us aid you. Write today.

NOW! Method II Packaging Material



LOXTITE PROTECTIVE PARTITIONS • "VICTORY" WRAP
• PRINTED CELLOPHANE BAGS, ALSO WRAPPERS
IN SHEETS OR ROLLS • "TITE-SEAL" LINERS
Patents Applied For

\* RECOMMENDED after tests by Forest Products Laboratory

## TRAVER CORPORATION

Dept. P7, 358-368 West Ontario Street, Chicago 10, Illinois



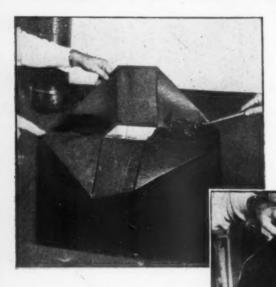
# THE FINISHING TOUCH

NUMBER FOUR OF A SERIES

## WE CAN MAKE CASE LINERS AS FAST AS YOU CAN USE THEM!

Left: Fabricating a case liner over a wooden form.

Below: The finished liner, ready to be inserted in a shipping container.



When America began to pour its myriad tons of war materiel across both oceans, it became our task to pack millions of finished parts for export shipment.

In this manner we started the manufacture of waterproof case liners, and today we make them for a wide range of industries. Producing them for use in your plant, we can give you the service you need regardless of quantity.

The military services accept several types and qualities of case liners conforming to Government Specification No. 100-14A. The ones shown on this page are made of L-2 material, which consists of two sheets of paper uncreped, cemented together with asphaltum and having one

sheet coated, saturated, or infused with asphalt.

Since the primary purpose of all export case liners is to resist the unusual conditions of wartime oversea shipping, severe tests are applied before liners are accepted by military inspectors. L-2 liners, for instance, are required to withstand an immersion test of 48 hours without deteriorating. It is significant that in this same test Japan Company liners stood up for 200 hours completely submerged in water.

#### Are you reordering case liners? Get our prices first!

We have helped to solve the export packing and shipping problems of many firms in this area, and it may be that we can make your job easier, also. In any case, it costs nothing to find out, and we suggest that you get in touch with us for advice on any matter of this nature.

## FREE DATA ON PLASTIC DIPPING

Our advertisement on the new ethylcellulose dipping process for export shipment caused quite a storm of inquiry. We are still replying to the hundreds who wrote us for additional information.

Although ethylcellulose is high on the list of critical materials, it

may be available for use on your type of product. If you want to know more about it, just drop us a line and we'll send you a copy of our *Iron Age* article, "Plastic Dipping for Export Shipment."

This reprint gives details of the ethylcellulose stripping method, as well as useful information on the 1A method of protective wrapping.



(Reprints of other advertisements in this series sent free upon request.)



JOBBING JAPANNERS AND ENAMELERS

5103 LAKESIDE AVE. HENDERSON 5153 CLEVELAND 14, OHIO





# THE Pittsburgh TUBULAR RAILWAY AXLE





The A. A. R. approved Pittsburgh Tubular Railway Axle owes its superior strength, in part, to its forged contour which maintains unimpaired steel structure and unbroken flow lines. The continuous flow of the steel, approximately conforming with the shape of the axle ends, is illustrated by the photo of an etched longitudinal cross-section above.

This strength-imparting production principle increases fatigue limits materially. Tubular construction permits faster heat dissipation resulting in cooler running. Substantial weight reduction is achieved at the same time, saving up to approximately \$15.00 per car per year in dead weight hauling. Minimized rail hammer and less track and rolling stock wear are further advantages from lower unsprung weight.

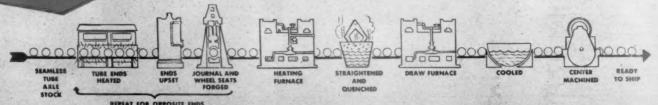
Pittsburgh Tubular Axles are, of course, fully interchangeable with solid axles, either singly or in sets, for both roller and friction bearing installations.

Aptly called "the Axle of Tomorrow," because of its revolutionary advantages, it is a production reality today. Ask for specifications and full information.

#### TSBURGH STEEL COMPANY

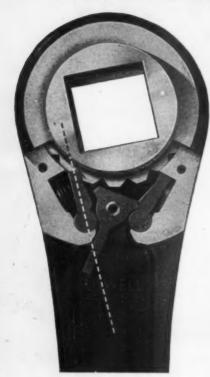
1671 Grant Building (P) Pittsburgh, Pa.





PRODUCTION FLOW CHART FOR PITTSBURGH TUBULAR RAILWAY AXLES

## THE INSIDE STORY



The two straight Pawls of hardened steel set in the solid stock of the handle where they rotate are backed up by the solid stock of the Handle and the Gear, the strongest construction that can be had.

The Shipper rotates on the solid stock of the Handle, not on a pin or screw.

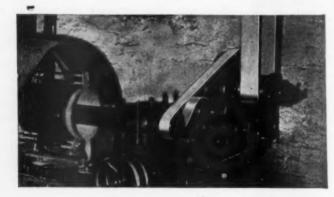
Lowell Distributors are located everywhere.



THE OLD RELIABLE WRENCH

1869 LOWELL WRENCH CO., Worcester, Mass. 1944

In the "Long Run"



# it is more economical to install TANNATE LEATHER BELTING

The unusually long service life of Tannate Leather Belting that results from its exceptional strength and endurance qualities, is but one way it proves its economy. With practically no maintenance Tannate keeps machines producing at top, uniform speeds, assures maximum output at low unit cost. Tannate is resistant to moisture, machine oils and many weak chemicals.

Rhoads Engineering Advice has shown many plants the way to lower belt costs — can we help



J. E. RHOADS & SONS 25 N. Sixth St., Philadelphia 6, Pa.
New York • Chicago • Atlanta • Cleveland

Established 1702 MERIT AWARDS ARMY — NAVY — MARINE



Flag of Charles T. Brandt, Inc. now flies four stars.

Charles T. Brandt, Inc., Baltimore, Md. Fourth star for Army-Navy "E".

Lewyt Corporation. Brooklyn, N. Y. Army-Navy "E" flag.

Sylvania Electric Products, Inc., Emporium, Pa. Third star for Army-Navy "E" burgee.

Westinghouse Electric & Manufacturing Co. Manufacturing and Repair Dept.. plant in Buffalo, N. Y. Army-Navy "E" pennant.

Aero Equipment Corp., Bryan, Ohio. Second star for Army-Navy "E".

Aluminum Industries, Inc., Cincinnati, Ohio. Renewal of Army-Navy "E" for third time.

General Electric Co., River Works, Lynn, Mass. Maritime "M" award.

Wiremold Co., Hartford, Conn. Army-Navy "E". Renewal.

International Business Machines Corp., Endicott, N. Y. Third Army-Navy "E" award.

Cook Electric Co., Chicago, Ill. Superior Guard Guidon. This is awarded by Army to plants "whose auxiliary military police force measure up to exacting standards of excellence."

Willard Storage Battery Co., Cleveland, O. National Security Award "in recognition of superior standards of efficiency in protection and security."

Manhattan Rubber Mig. Divn., of Raybestos-Manhattan, Inc., Passaic, N. J. White star for A-N burgee.

Signode Steel Strapping Co., Chicago, Ill. Army-Navy "E" award.



At Signode A-N "E" Ceremonies

# ON AND OFF 1,034,827 TIMES STILL RUNNING PERFECTLY

"Armored in Plastic"

## ELECTRIC DRILL

ery Original Revolving Part St

Functioning Sationally After 18. Months

For over 18 months—every consecutive working day since December 1 - 1942 a Thor "Armored in Plastic" Portable Electric Drill has been automatically starting and stopping while an indicator counts each completed cycle.

This testing of the action of centrifugal force and accelerations on all parts still carries on after completing 1,034,827 cycles to amass more and more convincing proof of the durability of these Thor plastic-housed production and maintenance drills.

Already proved even if the test were to stop todayis the durability of Thor motors, gears, bearings and other parts of the unit! Newly proved is the durability, greater protection and perfect alignment provided by the inner metal frame which holds the operating parts without assistance from the drill's plastic housings!

## LABORATORY TEST ORDER Independent Pneumatic Tool Co.

Test Item:

Ul4K Plastic Drill

Dec. 17, 1942

Problem:

Durability under repeated reversal of stress. Determine number of times the drill may be started and stopped before failure of any part occurs. (Brushes excepted.) Note carevear due to accelerations and reversal of stress on all Continue test until first breakdown occurs.

Method:

Arrange apparatus for automatic on and off switching. Each time the drill is turned on it must come up to full speed. Each time the drill is shut off it must stop completely. Full running speed and complete stops must be accompletely. Both the maximum completes stops must be actioned to both the outward and inward directions in motor windings in of windings and utmost stress due to accelerations.



DAILY LABORATORY TEST REPORT TORK Plastic Drill.

June 18, 1944

Darwood ity under repeated reversal of etress. part areature, Communitator, Completed, Each Original Wolfintegrating Perfectly, Stator, Rears, bearings, Still Second standard lubrication.

For complete information specifications of all types models of Thor Portable Electroduction and maintenance to write today for Thor Catalog

This same Thor motor, packing more power per pound of machine than is same features of durability and top performance, is the heart of every Thor Portable Electric Tool:

· DRILLS

HAMMERS

• GRINDERS

• SCREWDRIVERS

· SAWS

. NUT SETTERS

Partable Pneumatic and Electric Tools

INDEPENDENT PNEUMATIC TOOL COMPANY



JACKSON BOULEVARD, CHICAGO 6, ILL



A cutting fluid is measured by its performance on a particular job. Yet it isn't necessary to try one oil after another until you hit the one which performs best. Engineering knowledge based upon experience can expedite your selection.

D. A. Stuart Oil Co. offer you the cooperation of skillful, trained engineers. Experience since 1865 has developed an insight into the fundamentals of cutting and grinding fluid application which is available to you with every drum of Stuart Oil.

There is a Stuart service engineer near you ready to help eliminate guessing at cutting fluids. Why not use him?

Having difficulties in thread grinding, gear grinding, form grinding? Investigate Stuart's grinding oils, including Thred Kut 99 grinding oil, SuperKool 81X, and Excelene.

Our new booklet, "Grinding With Oil," tells the story. Write for a copy.

## D.A. Stuart Oil co.

LIMITED

2757 SOUTH TROY STREET, CHICAGO 23, ILL.

ESTABLISHED 1865

Warehouses in Principal Metal-Working Centers



#### GENERAL MILLS MOVES INTO MECHANICAL FIELD

Establishment of the Mechanical Division of General Mills, Inc., as a fullfledged operating division, is announced by President Harry A. Bullis. In the post war period the mechanical division will engage in the production of precision devices for industrial customers and will also design, manufacture and distribute other mechanical products under the company's name. At present the division consists of two plants with some 350,000 sq. feet of floor space, and 1500 employees. The division is the outgrowth of a machine shop and engineering staff established by the Washburn-Crosby company in 1915 for mill maintenance and the development of new operating devices and methods.

In addition to developing processing and packaging machinery for company use, the division will manufacture various mechanical products now in various stages of development for industrial, commercial and civilian markets.

#### NEW SERVICE FOR LOCATING SCREW MACHINE CAPACITY

Due to the many requests for assistance in locating available machine capacity, the National Screw Machine Products Association has set up a clearing house for such requests.

All member companies are now reporting, to the Association, machine capacity presently available and capacity expected to be available in the near future. Additional information furnished by these companies enables the Association to promptly locate the manufacturers best equipped to produce a particular part.

This service is provided free to buyers of screw machine products. Names of suppliers having suitable capacity may be obtained by furnishing the Association with a description of the required part, including type of material, tolerances, and quantity required.

Inquiries should be addressed to Dept. K, National Screw Machine Products Association, 13210 Shaker Square, Cleveland 20, Ohio.

#### THE HOW AND WHAT OF RESIN ADHESIVES

Starch Products, Inc., 270 Madison Ave., New York, N. Y., has just published a booklet entitled "The What, Where, Why How of Resin Adhesives". It traces their development, defines the trade terms associated with them, describes their properties, suggests applications and outlines procedures for handling various types of resinous products. Its 16 pages are written in terse, non-technical language. In view of the publicity given to synthetic resin adhesives which frequently presents them as a panacea to the packaging problems of the future, this explanation of what they are, and what they can be expected to do, should be of pratical interest. Copies available for the asking.

## wherever a tube is used...



THE ELECTRONIC CALIBRATOR

A recently designed automatic calibrator for frequency meters used in conjunction with adding machines largely eliminates tedious hand calibration, sources man hours, reduces element of human error, spands production.

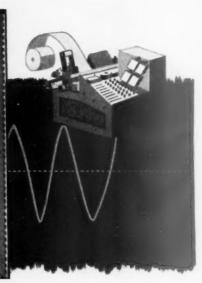


Photo Courtesy Philco Corporation

THERE'S A JOB FOR

S

n

## Relays BY GUARDIAN

The Philco 126-tube Electronic Calibrator employs a system of fast and slow-acting relays and solenoids to bring about desired end actions. One application is the transferring of readings from the storage bank (shown above) to the key-board of the adding machine. Operated by the plate current of OA4G tubes the relays on the storage bank energize the adding machine solenoids which press the proper number key of the adding machine.

The Guardian Series 120 relay used in this application is a small, sensitive unit having a minimum power requirement of 0.5 VA and an average of 2 VA. Coils are available in resistances from .01 to 6,000 ohms. Contact combinations up to single pole, double throw with 12.5 amp. points. Send for Bulletin 120.

The solenoid is Guardian Series 4 available for either A.C. or D.C. use. Series 4 A.C. at a maximum stroke of 1" permits a pull of 14 oz. intermittent duty, 3 oz. continuous duty. Series 4 D.C. at a maximum stroke of 1" permits a pull of 6 oz. intermittent duty, 1 oz. continuous duty. Send for information.



Series 120 Relay



Series 4 Solenoid

Consult Guardian whenever a tube is used—however—Relays by Guardian are NOT limited to tube applications but are used wherever automatic control is desired for making, breaking, or changing the characteristics of electrical circuits.

GUARDIAN
1635-H W. WALNUT STREET



ELECTRIC

CHICAGO 12, ILLINOIS

A COMPLETE LINE OF RELAYS SERVING AMERICAN WAR INDUSTRY



Cortland has Snagging Wheels in all types and sizes, for operation on floor stands, portable grinders and swing frames.

that is "different"

All Cortland Wheels give outstanding performance — and a wheel specified by Cortland Engineers should give you rapid stock removal—longer wheel life—cooler grinding action.

Cortland Vitrified Bonded Grinding Wheels for speeds up to 6,500 S.F.M.... Resinoid Bonded up to 9,500 S.F.M.

Write to CORTLAND GRINDING WHEELS CORP., 12 Cortland Street, Chester, Mass.



#### CONTINENTAL CAN ACQUIRES REYNOLDS MOLDED PLASTICS

Acquisition by the Continental Can Company of Reynolds Molded Plastics Division of Reynolds Spring Co., Cambridge, O., gives the can company possession of what is said to be the nation's third largest plastics molding concern. Continental Can entered the plastics field in 1943 through acquisition of a substantial interest in Marco Chemicals Co.

#### WESTERN ELECTRIC TAKES OVER DEFENSE PLANT AT SCRANTON

The Western Electric Co. under an agreement arranged through the Signal Corps, will take over the Defense Plant Corporation's factory at Scranton, Pa. The plant adds approximately 87,000 square feet of manufacturing space to Western Electric's facilities, and will enable Western Electric to transfer a portion of its wire and wire-products operations from its works in Baltimore.

### NOW FARADAY ELECTRIC CORPORATION

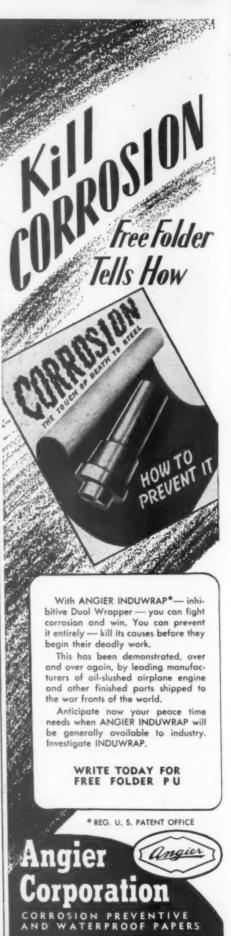
E. I. Kleinman is president of the Faraday Electric Corporation, Adrian, Mich., a consolidation of the Stanley & Patterson Co. of New York and the Schwarze Electric Co. of Adrian. J. S. Ackerman and J. M. Doroshaw are vice presidents, and L. J. Stern is executive vice president; P. H. Hill vice president in charge of sales; F. Von Voigtlander, vice president in charge of engineering, and N. Cellentani is vice president in charge of manufacturing. J. S. Rodie is secretary and treasurer.

### SERIES OF PRACTICAL ADVERTISEMENTS

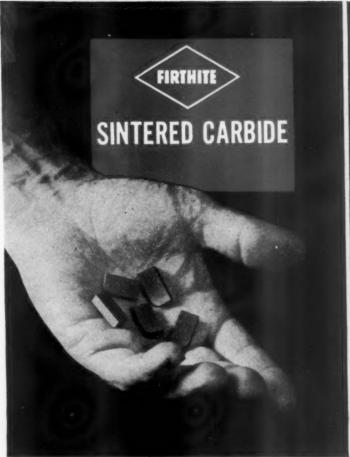
Series of advertisements published by The Lamson & Sessions Company, 1971 West 85th St., Cleveland, in Purchasing and other business publications, constitute a practical guide and reference chart for buyers of bolts, nuts, cotters and other fasteners and parts. For instance, two of the ads deal with the strength of various steels and show the buyer how he can buy a bolt ½" diameter that will do the work of a ¾" diameter bolt, explain the advantages of ordering bolts produced by upsetting versus milling, describe varied specialities and their merits and uses, and contain other worthwhile information.

### TO BUILD COULTER AND AUTOMATIC THREAD MILLING MACHINES

The Universal Engineering Corp., Cedar Rapids, Ia., announces that it has acquired the manufacturing rights, parts, stocks and current orders for the U-6 Automatic and Coulter types of thread milling machines formerly manufactured by the Automatic Machinery Corporation and the Bolton Manufacturing Co., both of Bridgeport, Conn. H. Earl Fries is manager of the Machine Tool Division of the company.



FRAMINGHAM, MASS.





## THERE ARE PLACES FOR BOTH ...

Firth-Sterling, long specialists in making steels for shop tooling, early recognized the possibilities of carbides as a means of extending the improvement in shop practice brought about by the super highspeed steel—CIRCLE C. But, there is a place for both . . .

Where the highest speeds are obtainable or materials are hardest, FIRTHITE is the "last word" in a cutting material. It is used at speeds up to ten times those possible with high-speed steels. Where speeds above average are permissible or materials are "on the hard side," CIRCLE C will cut at least 25% faster than ordinary grades of high-speed steel. Send for descriptive literature on these remarkable materials.

S.

For instance:

FIRTHITE removes 730 pounds of gray-iron casting metal per hour instead of 180 pounds;

drills a gun barrel in 23 minutes instead of 1 hour; enables milling-cutters to run at 1,000 feet per minute instead of 100 feet with previous materials.

For instance:

die blocks in 28 hours instead of 42 hours . . . doubling production between grinds — versus regular high-speed steel;

turns two to ten times more pieces of heattreated alloy steel between grinds than other highspeed steels.





- \* Gray Iron
- \* Semi-Steel
- ★ High Test Semi-Steel
- \* Any Size up to one ton

Two modern foundries equipped for fast, efficient production can meet your casting requirements.

FOREST CITY
FOUNDRIES CO.
2500 West 27th St.
Cleveland 13, Ohio
PHONE PROSPECT 5040

#### FIRE PROTECTION FOR SPRAY BOOTHS

The Walter Kidde & Co., 140 Cedar St., New York is now working with makers of spray booth equipment looking to the development of engineered automatic fire protection as an integral part of dip tanks and washing and spray booths. The built-in Kidde systems include high pressure cylinders of adequate capacity, valves, controls, piping and discharge nozzles.

## 1 1 1 DATA CHART ON TUBE-TURN WELDING FITTINGS & FLANGES

Tube Turns, Inc., Louisville, Ky., recently issued a handy pocket-size dimensional data chart which gives complete quick-layout information on every Tube-Turn welding fitting and flange. Charts are 9" x 24", printed in two colors. They are ideal for spreading out on drawing board or desk, or they can be folded into a 9" x 4" size. Copies available for the asking.

#### GROSS GEAR AND MACHINE CO. CHANGES NAME

Cross Gear and Machine Co. has changed its name to The Cross Co. President Milton O. Cross, Jr., explained that the company's activities have broadened to include a wide range of special machine tools and the old name did not describe the firm's business. There will be no change in policies or personnel.

#### 1 1 1 SYNTHETIC OPTICAL CRYSTALS

The Harshaw Chemical Co., 1945 East 97th Street, Cleveland, Ohio, recently published a Synthetic Optical Crystals Booklet, describing crystals that "are grown from their molten salts". The Harshaw Company is the only commercial manufacturer in the world producing synthetic crystals by this method, perfect single crystals up to 35 lbs. in weight being produced. The book explains and portrays the method of production, and their uses in infrared spectroscopy.

### MANGANESE STEEL FOR THE CONSTRUCTION INDUSTRY

New bulletin, No. 1143-CI, bearing the title "Manganese Steel for the Construction Industry," has been released by the American Manganese Steel Division, American Brake Shoe Co., Chicago Heights, Ill. Particularly featured are various materials handling units, including power shovel dippers, steel dragline bucket parts, crusher parts, steel conveyor and elevator chain and ditcher and tractor parts.

## INDUSTRIAL WIRE ROPES HAND-BOOK NOW READY

The new 1944 edition of "Industrial Wire Ropes Hand Book", published by Broderick & Bascom Rope Co., 4203 N. Union Blvd., St. Louis, 15, Mo., is now ready for distribution. This 96-page book

is full of helpful information for buyers and users of wire rope. It covers the selection of the right rope for the job, illustrates rope constructions, working loads, stresses, sheave and drum sizes and contains catalog section of wire ropes used in the industrial field. A section is devoted to wire rope slings, including the braided wire rope slings, which due to their flexibility, have become very popular in the past few years.

## FELT PRODUCTS MFG. ACQUIRES FACTORY BUILDING

The acquisition of another new factory building is announced by Felt Products Mfg. Co., Chicago, makers of gaskets, packings and other sealing materials. The new building, which will be an addition to the plant buildings already occupied, is a two-story structure with 55,000 sq. ft. of floor space.

#### CHANGE NAME TO WITCO CHEMICAL COMPANY

Wishnick-Tumpeer, Inc., New York N. Y., manufacturers and distributors of chemicals, pigments and asphalt products, has changed its name to Witco Chemical Company. No change in corporate structure, management or personnel are effected by the change in name, which is based on the company's long established trade-mark "Witco."

#### WHITING CORP. ACQUIRES HYDRO-ARC FURNACE CORP.

The Hydro-Arc Furnace Corporation, LaGrange, Illinois, which has been associated with Whiting Corporation of Harvey, Illinois, has just been acquired by the Whiting organization. W. Harvey Payne, President of Hydro-Arc, will serve in the capacity of consulting engineer for Whiting on electric furnace projects. A. W. Gregg, executive engineer of Whiting's Foundry Equipment division, will be in charge of the electric furnace department.

#### YALE & TOWNE BUYS IRON SCALE BUSINESS

Announcement is made by W. Gibson Carey, Jr., president of the Yale and Towne Manufacturing Co., New York, of the acquisition of the scale business of the Kron Company, Bridgeport, Conn. Facilities and personnel of the Kron Company will be maintained in Bridgeport as heretofore under the general direction of the Philadelphia Division of Yale & Towne Manufacturing Company.

#### ADMIRAL CORPORATION ACQUIRES 8-W REFRIGERATOR AND RANGE DIVISIONS

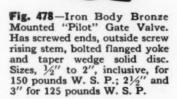
An agreement has been entered into under which Admiral Corporation, Chicago, Ill., acquires the refrigerator and electric range manufacturing divisions of the Stewart-Warner Corporation. Provisions of the agreement stipulate that (Continued on page 282)

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e 0 NEEDED

Global Strategy with **POWELL** Engineering at your service .... Fig. 190 - Iron Body Bronze Mounted "Irenew" Globe Valve for 150 pounds W. S. P. Has screwed ends, inside screw rising stem, union bon-net and regrindable, renew-able "Powellium" nickel bronze seat and disc. In sizes, ' to 3", inclusive. Guessing and gazing are out when it comes to buying your flow control equipment. Because, for even the simplest operation, the valve must be of correct design to obtain maximum efficiency. This not only includes basic type, such as Globe, Angle, Gate, "Y", Check, Relief and Non-Return, but such factors as suitable stem action, bonnet construction, working pressure and especially the materials used in the body and mountings. Thus, for certain services, an all iron valve is not only entirely adequate but most economical. But in many cases bronze, steel, pure metals or even special alloys are indicated. POWELL makes them all. And to assist you in selecting the correct valves to meet your individual requirements, POWELL maintains a staff

for consultation and advice.





of engineering experts who are always at your service

The Wm. Powell Co.

Dependable Valves Since 1846 Cincinnati 22, Ohio



Fig. 301 - Iron Body Bronze Mounted Globe Valve for 125 pounds W. S. P. Has flanged ends, outside screw rising stem, bolted flanged yoke, renewable bronze seat and renewable vulcanized composition disc. Available in sizes, 2" to 10", inclusive.

THE BATTLE PROVEN WATER COOLERS Electric THE PROVING GROUNDS OF WAR offer dramatic confirmation of the ability of the Cordley Electric Water Coolers to withstand hard knacks. Supplied since 1942 for shipboard use to the Navy (Contract NXs 9982) and to the Maritime Commission. These same Battle Proven Coolers are now available for essential uses on land. Write for facts. CORDLEY & HAYES A56 FOURTH AVENUE NEW YORK 16 CHRELEY. Manufacturers of water coolers since 1889

(Continued from page 280)

Admiral Corporation plans to acquire the tools, dies, jigs and fixtures, trade names, patents, patent rights and pending patent applications, as well as engineering developments in progress in the refrigeration and electric range divisions. The facilities and assets are those utilized by Stewart-Warner prior to the war in manufacturing the Dual-Temp line of refrigerators, the Scotch-Maid electric ranges, and a freezer locker known as Eskimo Pantry and Sub-Temp. Ross D. Siragusa is president of the Admiral Corporation which in peacetime was the world's largest manufacturer of a varied line of radio products.

## PITTSBURGH PLATE COMPLETES LARGE CHLORINE PLANT

Completion of the largest chlorine plant ever built as a single unit East of the Mississippi River, is announced by the Columbia Chemical Division of Pittsburgh Plate Glass Co. The plant is located at Natrium, W. Va. In addition to manufacturing liquid chlorine, the plant also produces caustic soda as a co-product.

#### TITEFLEX, INC. NEW NAME OF TITEFLEX METAL HOSE CO.

Titeflex, Inc., is the new name of the Titeflex Metal Hose Co. of Newark, N. J., as the old name no longer is indicative of the wide range of products made by the company. After the war, the manufacture and sale of a broader line of products is anticipated.

## EVERCRETE CORP. TAKES OVER STOPZIT

The Evercrete Corp., New York, N. Y., advise that they have acquired the formula for Stopzit waterproofing product from the S & E Waterproofing Corp., and now package the material in one gallon and five gallon containers. The material is available in white and gray.

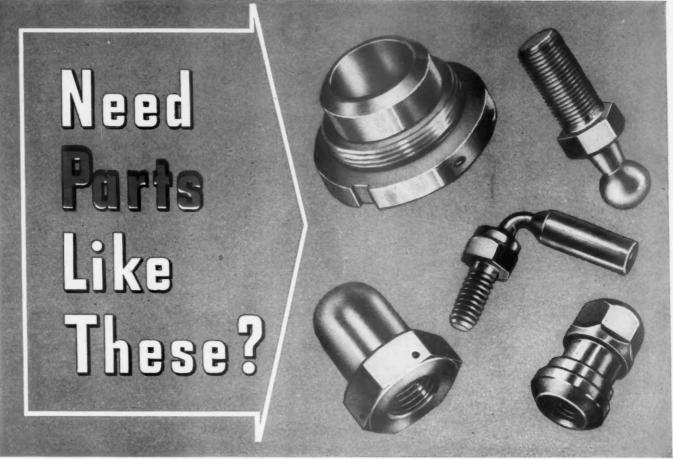
## CHANGE NAME TO CORDO CHEMICAL CORP.

Cordo Chemical Corporation is the new name of the Corrosion Control Corporation of Norwalk, Conn. Change was made that name might be more representative of the company's expanded line which now includes industrial coatings, finishes, lacquers and bonding adhesives.

## AROPLAZ INTERIOR ARCHITECTURAL AND INDUSTRIAL COATINGS

New interior architectural and industrial coatings resin named Aroplaz 1306 is being marketed by U. S. Industrial Chemicals Inc., 60 E. 42nd. St., New York, N. Y. Manufacturer states that for many purposes it can serve as a complete or partial replacement for alkyd resins; also for modified phenolic and maleic resin-and-oil combinations. It has

(Continued on page 284)



## Come to Tourek

These are typical precision screw machine parts. Tourek can make them exactly to your specifications ... in any size from 1/16" to 2.5/8"... in any metal . . . in any quantity. Here at Tourek to supply these custom parts is an organization coordinated to serve. An organization complete and modern in equipment . . . ingenious in engineering "know-how". . . and rich in manufacturing experience.

Although present production demands are today engaging our facilities, we are eager to serve you. Why not consult us-particularly on your postwar screw machine parts problems?

#### TOUREK'S EQUIPMENT

Tourek's modern plant is equipped with the latest model automatic screw machines, all supplementary necessarv equipment and complete tool room facilities.



TOUREK'S EXPERIENCE To the solution of your special problems Tourek brings to bear nearly a quarter of a century of successful, volume manufacture of screw machine parts of the most intricate design and precise dimensions.



#### TOUREK'S INGENUITY

Tourek's Engineering Staff works closely with you to devise the most effective design and economical production of precision parts.





MAKERS OF THE FAMOUS **TOUREK BALL JOINTS** 

PRECISION SCREW MACHINE PARTS 701 West 16th Street

THE HEIR OF GASOLINE ENGINES Recently the Two MILLIONTH Briggs & Stratton engine moved off our production lines. We are now well started on the THIRD MILLION. Air-Cooled Power BRIGGS & STRATTO

We of Briggs & Stratton are proud of the endorsement of manufacturers, dealers and owners — and proud to be recognized as leaders in design, engineering and research, as well as precision production — the results of twenty-five years of continuous production of air-cooled gasoline engines. BRIGGS & STRATTON CORP., MILWAUKEE I, WISCONSIN, U. S. A.

(Continued from page 282)

good resistance to water and alkali plus good flexibility; excellent initial gloss and gloss retention, dries to a hard tackfree film over night when proper dries are used. Color initially is very pale, and the staining properties are said to be so slight that enamels can be made closely approaching the whiteness obtained with alkyds.

#### NAME CHANGED TO KELLER TOOL COMPANY

The name of William H. Keller, Inc., Grand Haven, Mich., pneumatic tool and air motor designers and manufacturers, has been changed to Keller Tool Company, to more closely identify the company name with the products manufactured.

#### ACQUIRED BY GREENE TWEED & CO.

The Asbestos Fibre Spinning Co., North Wales, Pa., has been purchased by Greene, Tweed & Co., New York, N. Y. Asbestos Fibre has been principally engaged in the manufacture of asbestos textiles.

#### **Back to Fundamentals**

(Continued from page 76)

is scarce, but don't put any chips on historical anything—history records, conditions and happenings of the past. Today will be yesterday —tomorrow.

#### The New Economics

Price, too, is a fundamental measure of value-one of them-and an Purchasing on a important one. price basis only, however, can be an expensive delusion. Paying more for tailor-made or high quality materials may easily reduce the cost of production or maintenance. That is one of the elemental and fundamental principles of purchasing. Now we have a whole new world of substitute and synthetic materials to choose from and apply that principle to-and it won't be easy to keep decisions well above that 50-50 breaking point that separates good and successful purchasing agents from those who fail to measure up to the requirements of the job.

Inventories can make or break companies over the next several years and surpluses may be serious hazards if left idle in the storeroom and warehouses.

About every ten years we become conscious of the cost—and the danger—of holding onto excessive inventories. Some may still cling to

(Continued on page 286)



## **GREAT LAKES ALLOY STEELS**

Wherever our fighting forces go, Great Lakes Steels go too . . . N-A-X ARMOR PLATE, N-A-X HIGH TENSILE and N-A-X 9100 SERIES STEELS—in practically every type of combat equipment. This widespread war use of these metals is indicative of their importance in the peacetime products of to-

morrow. A unique combination of outstanding advantages guarantees it . . . (1) Great strength and toughness. (2) High resistance to impact and fatigue. (3) Excellent fabricating features. Write for our booklet on N-A-X Low Alloy Steels. It may start you on a profitable line of thought.

## GREAT LAKES STEEL CORPORATION

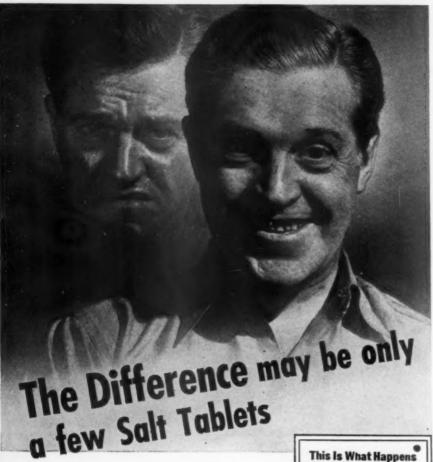


DETROIT 18, MICHIGAN

Sales Offices in Principal Cities

Division of NATIONAL STEEL CORPORATION Executive Offices, Pittsburgh, Pa.





#### ... and they cost less than I cent a man per week

Salt is vital to proper body tone. Loss of salt through sweat can easily transform an eager, alert, comfortable worker into one who is fatigued, miserable, careless.

Loss of salt dehydrates the body, thickens the blood, destroys the equilibrium of body fluids. The results are Heat-Fag, inalertness, accidents, heat prostrations.

The preventive is salt and water-water to restore the moisture lost in sweat, salt to restore the saline balance. Water alone won't do it. Under hot, "sweaty" conditions water alone dilutes the blood and causes heat cramps,

Industrial physicians with America's greatest manufacturing plants have found that the easy, simple, economical way to provide essential salt is Morton's Salt Tablets at every drinking fountain. A tablet with every drink of water is all that's necessary to prevent Heat-Fag, heat cramps, heat prostrations - to keep workers aiert, comfortable, at peak production. The cost is less than a cent a man per week.







QUICK DISSOLVING

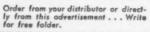
Cless than 30 Seconds)
This is how a Morton's Salt Tablet looks when magnified. See how soft and porous it is inside. When swallowed with a drink of water, it dissolves in less than 30 seconds.

Case of 9000, 10-grain salt tablets Salt-Dextrose tablets, case of 9000 - -

MORTON'S Heat-Fag >

#### MORTON'S DISPENSERS

They deliver salt tablets, one at a time, quickly, cleanly-no waste. Sanitary, easily filled, durable. 800 Tablet size - - - \$3.25



MORTON SALT COMPANY, Chicago 4, III.

#### Back to Fundamentals

(Continued from page 284)

the idea that the cost of carrying inventories is the interest on the money invested, say 4% or 6% a year. That is only a fraction of it, however, and 25% is probably a fair average if our accounting experts are on the beam.

Perhaps someone will develop a radar contraption to tell you how, when and what to buy; I wouldn't bank on it. Perhaps some adaptation of the bombsight or range finder will locate materials and low cost sources of supply, but I don't believe we can depend on any easy solution of these problems.

Finally, we must be familiar with the economic laws and many other laws and regulations that influence or govern business transactions. I don't claim to be an economist, but it is my curbstone opinion that we must allow for some drift in the economic laws and their effect on Labor rates and agricultural prices will certainly have every support the Government can give them. On the other hand, we have recent examples of prices being reduced because of supply conditions.

If these problems don't concern the purchasing agent, if he does not participate in the policy-making decisions they raise—the company suf-fers. In the company where the purchasing job is measured by the number of requisitions received or the number of orders issued, it is valued only as a mechanical operation; some job evaluation experts prove their own inexpertness in comparing organization values by the use of such mechanical measurements-it is because they are themselves mechanical.

Machines don't think and they can't make decisions, and over the next few months and years, a decision not to buy may be more important than any purchase order issued. This is a fundamental to remember - never be pushed or high-pressured into spending the company's money - not even for one of the romantic laboratory developments we hear so much about, unless it does the job better or cheaper, and is a better value.

#### Association Responsibilities

Another famous Roosevelt left us a gem of advice when he said, "Every man has an obligation to devote a portion of his time, and

(Continued on page 288)



# A FAMOUS FIELD GUN SPROUTED WINGS WHEN THEY FOUND A WAY TO TAME ITS KICK

I NTO the air has been lifted the deadliest, heaviest gun ever mounted in an airplane. The B-25 Mitchell with a 75-mm. cannon in its chin now fires high explosive shells that can blow a light tank inside out, put an anti-aircraft battery out of action and hit attarget from a distance of two miles.

The shells it fires are 26" long, weigh 20 pounds each; the projectile proper weighs 15 pounds. During tests, North American engineers have fired 3 shots in ten seconds.

How can a plane shoot such a terrific blast and yet stay in one piece? A hydro-spring recoil device, details of which are restricted, makes it possible. Actually the recoil felt in the plane is negligible. "Feels like an

automobile 'coughing' on a cold morning" is the way one pilot put it.

It was our privilege to successfully furnish the springs for this flying cannon. The problem was to manufacture a spring no larger than 6" diameter, with definitely fixed height limitations, that would absorb the recoil set up by the hydraulic mechanism and re-position the gun for firing, all within the space of 1/6 of a second.

The specialized knowledge of springs that our engineers brought to this difficult job is at your service. Certainly they should be able to provide you with springs, whether used for war equipment or for peacetime products, superior both in quality and performance.



• Made of a special type steel pretempered prior to coiling to a tensile strength far in excess of the regular normal tensile strength for this size wire! Designed for a minimum number of cycles to fit the smallest possible volume, this spring is stressed far beyond normal design specifications.

#### AMERICAN STEEL & WIRE COMPANY

Cleveland, Chicago and New York

Columbia Steel Company, San Francisco, Pacific Coast Distributors
United States Steel Export Company, New York



U.S.S American Quality Springs

UNITED STATES STEEL



# RUST PREVENTIVE

• A 26-year record of achievement is back of NO-OX-ID products. NO-OX-ID enlisted in World War One. After the war it established an enviable record in protecting machinery parts and equipment in long-time storage. Again, in the present war, NO-OX-ID and NO-OX-IDized Wrappers were among the first in military service.

When you put NO-OX-ID products to work in your plant you provide the time-tested rust preventive upon which you can rely for complete protection.

Interesting data is available on the application of NO-OX-ID for the protection of parts between departments in plants . . . for the maintenance of steel structures . . . for the protection of shipments by land, air, or sea. Write for this data . . . no obligation.

DEARBORN CHEMICAL COMPANY Dept. AA, 310 S. Michigan Ave., Chicago 4, Illinois

#### **Back to Fundamentals**

(Continued from page 286)

ability to the upbuilding of his profession." That was written as a simple fundamental truth, not as a sales talk for any association. It is selfishness, enlightened selfishness, to build the standards and standing of your profession. Any effort contributed to the upbuilding of your profession returns direct dividends; it builds your own position in the company and your standing in the business community.

Some men get an exaggerated idea of their importance which is dangerous and damaging. No man is too big to contribute some part of his best efforts to his local association; no local association can afford to be without the best efforts of its best men.

We are proud of our National Association of Purchasing Agents and the affiliated local associations which are the N.A.P.A.

which are the N.A.P.A. We are justly proud of its accomplishments and standing; the membership and financial strength are at an all-time peak.

We are also justly proud of its democratic organization setup and procedure—of being governed from the bottom up through local groups, district councils and executive committee.

There is also a fundamental to consider here. That type of organization can only be successful if the best men available are introduced into that management at the bottom. We have been extremely fortunate in that respect, the men elected to manage N.A.P.A. have made it what it is—and that is best shown by the calibre of speakers and members attending this war conference.

If our Association is to continue to grow, to raise the standards and improve the standing of purchasing men, it must have the most representative purchasing executives elected to guide its local, district and international management. A position in that management must never be a reward, it must be an obligation to properly represent the purchasing profession. That is a responsibility of every member of N.A.P.A., a fundamental responsibility.

#### A Solid Foundation

The fundamentals are never dramatic; they are the difficult spade work—but they are the foundation on which we must build. Spectacular success and dramatic achieve-

(Continued on page 290)



Burgess-Norton is tooled up now to serve Post-War American Engine Manufac-

Pins... and for the production of many other hardened and ground screw machine and stamping products.

Available, too, will be the many Burgess-Norton developments resulting from war production of such products and of tank track links involving the latest technique and equipment in Hydrogen Copper Brazing . . . a process which, in many instances, will replace welding operations. Burgess-Norton's facilities,

"Know-How", Engineering Staff and Metallurgical Labora-

tories will be ready to serve you the day war production requirements permit.

A Part is Never Made Right unless it is Satisfactory to Our Customers

MANUFACTURING COMPANY

40 years in GENEVA, ILLINOIS

Tu



SIZES:

1/8" 3/16"

1/4" 5/16" 3/8" 7/16"

1/2" 5/8" 3/4"

**NEED COPPER TUBING?** 

Superior Tubing features uniform wall thickness—annealing to specifications—bright finish inside and out—ends sealed and machine wrapping for 50 and 100 ft. coils. Write for data.

PENN BRASS AND COPPER COMPANY . ERIE, PA.

BRASS AND COPPER



### New

#### MAGNUS ALL PURPOSE CLEANING MACHINE

If your plant does any metal cleaning or cleaning of dismantled parts before maintenance or reconditioning, it will pay you to investigate this new Magnus Machine.

It is adaptable to all cleaning methods and materials—alkaline solutions, emulsifiable solvents, degreasing solvents, etc. It is made in a wide range of capabilities to handle parts of all sizes. Above all, it provides a unique method of agitating the work in the cleaning solution which greatly speeds up the cleaning operation and improves results.

The METAL CLEANING HANDBOOK This co ual on ing bel files. If handbook marked materia chines and con ly. Witcopy.

This complete manual on metal cleaning belongs in your files. It is the only handbook which covers methods, materials and machines completely and comprehensively. Write for your copy.

## MAGNUS CLEANERS-METHODS-MACHINES

#### Back to Fundamentals

(Continued from page 288)

ments may now and then come by accident—but that is a very long shot to play.

Failure on the other hand is rarely found perched on a sound foundation of fundamentals—in a team, a company, an association, or a man.

Someone has said that genius or success is about 10% inspiration and 90% application and perspiration, and I have never heard of any sure thing short cuts that can safely be offered or recommended.

I don't know of any sounder advice to give you than to go to the principles and standards of purchasing practice of our Association and tell you to:

Be loyal to your company.

Be just and fair in your dealing. Have faith in the purchasing profession and contribute to its standards and standing by your actions and transactions.

#### Pulp and Paper Critical

(Continued from page 90)

"Scheduled production of printing papers is down substantially, newsprint being about 26% less than in 1942; groundwood printing papers down 12% and book papers down about 20% under two years ago. The scheduled production of fine papers will be approximately 15% less than in 1942 while in the coarse paper field second quarter output will be about 14% less," he explained.

"In course papers, bag paper for certain civilian uses will be more than 40% less, while certain types of grease proof and waterproof papers required for war purposes and food packaging are up as much as 85%. Multi-wall, heavy duty sack paper, as required by war industries and by the armed services will be up about 46% over 1942. Special industrial papers will increase about 35%, sanitary papers about 2%, absorbent papers will be up about 48%.

"As the war demands greater quantities of strong papers and paper board, more virgin sulphite pulp has been used in the production of certain of these highly important papers due to lack of sufficient waste paper. This has reflected itself in

(Continued on page 292)

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## Centralize with CENTRAL

Central-ized

ORIVING

If you're tired of "treading the mill"—buying your "fasteners" from several different sources, mailing extra prints and priority forms, expediting and checking multiple deliveries . . . consider the distinct advantages of "Centralizing with Central."



...

Nachine Screws



Self-Tapping Screws

Specialists in the manufacture of screws, bolts, nuts and rivets in all metals and finishes, Central offers virtually every type of standard and special cold-headed and roll-threaded "fastener." One order—one dependable source—no lost motion through centralized buying.

More—you save your assembly dollars with centralized driving, the precision centering of standard slotted or Phillips Recessed Head screws as perfected at Central. Hand or power drivers engage all screw heads instantly and securely while screws spin home on clean, sharp threads to insure solidified assemblies.

Located in Chicago, the hub of rail, hi-way and air transport—Central Screw Company is ideally located to dispatch shipments to you via direct route with low-rate deliveries. No delay . . . again, no lost motion. Decide today to "Centralize with Central." Try it . . . it works.



A "perfect impression" of the famous Phillips Recess in Central machine screws, sheet metal screws and stove bolts results in mar-proof assembly, speed and streamlined costs.

> Specify Centralized Driving

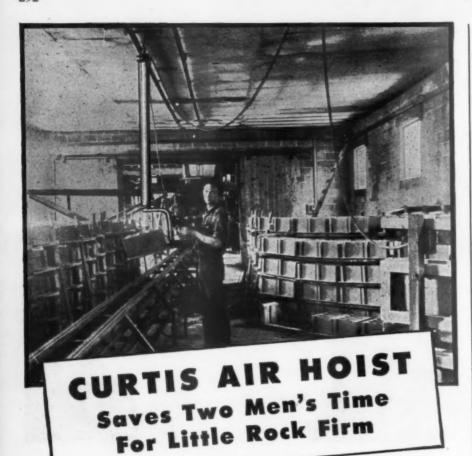






You can depend on Central

CENTRAL SCREW COMPANY



The Little Rock Lumber and Coal Co. uses the Curtis Air Hoist shown above to off-bear green concrete blocks from the curing room to the main conveyor. Previous to the use of the Curtis Hoist, handling 8x8x16 blocks was done by hand. Now, "one man, through the use of the Curtis Hoist, off-bears three blocks at a time, thus saving us two men's time."

In these days of man-power shortages, saving in man hours through the use of Curtis Air Hoists becomes more important than ever before. In addition, Curtis Hoists offer all these advantages:

- Smooth, fast, accurate control of loads
- One-man or woman operation finger-trip control
- Low first cost low operating expense
- Immune to abuse or overloads
- Light-weight pendant, bracketed, or rope compounded types
- Do not require skilled labor

You, too, can increase production efficiency, reduce worker fatigue, save man-hours of labor by solving many material handling problems with Curtis Air Hoists. Write for full information and free booklet, "How Air Is Being Used in Your Industry."



#### CURTIS PNEUMATIC MACHINERY DIVISION

of Curtis Manufacturing Company 1908 Kienlen Avenue, St. Louis, Missouri

Please send me booklet, "How Air Is Being Used in Your Industry."

	600		
Name	 		
Firm	 		
Street	 		
City	 	St	ate

#### Pulp and Paper Critical

(Continued from page 290)

a withdrawal of sulphite pulp which formerly would have gone into the manufacture of many types of business papers and civilian papers.

#### Costs Higher Than Ceiling Prices

"In the production of pulp from waste paper, costs are higher than prevailing OPA ceiling prices for virgin pulp. Therefore it should be realized by paper users that mills are not attempting to sell a cheaper grade of paper for profit motives," stated W. H. Kenety, Deputy Director in charge of Fine Book and

Newsprint Papers.

"Even though such raw materials continue to be received in approximately the same volume as the lastyear or two, we cannot expect paper production to increase materially because as has already been pointed out, production in 1942 and 1943 was maintained at a high level by withdrawing vast quantities of pulpwood and waste paper from inventories in mill yards. Since we are now operating on such a hand to mouth basis we will need increasing large supplies of new raw materials if we are to step up aggregate production of the finished product. So long as the war continues we can hardly expect any substantial relaxation in terms of military and defense plant needs. Luxury uses of paper are certainly out. In fact important uses must now be carefully guarded.'

#### Kraft Wrapping Paper Output Down 40%

"In the second quarter of this year total production of wrapping paper and bag paper will be about 50% less than in 1942," according to H. O. Nichols, Deputy Director in charge of Tissue, Waterproof and Coarse Papers, War Production Board.

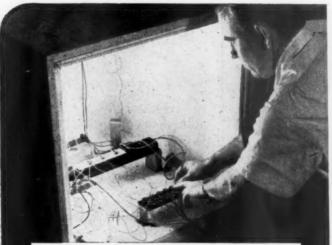
"Retail stores such as grocery stores, dry goods stores, hardware stores, etc., will obtain substantially less than the national average supply because industrial plants engaged in war work will undoubtedly demand larger quantities than heretofore," he said. "Retailers are already finding it necessary to devise ways and means of conserving the use of wrapping paper and bags."

"Current waterproof wrapping paper production is more than double last year's monthly average,"

(Continued on page 294)

## Certified ballasts and starters: one key to FLEUR-O-LIER'S dependable operation

• Fleur-O-Lier fluorescent lighting fixtures give you dependability, protection and service. Certified ballasts and starters are two of the most important reasons why. Like all parts of the Fleur-O-Lier fixture they are tested and certified by impartial Electrical Testing Laboratories, Inc. of New York, as meeting definite Fleur-O-Lier standards. Here are four tests that tell you why you'll want fixtures bearing this label:

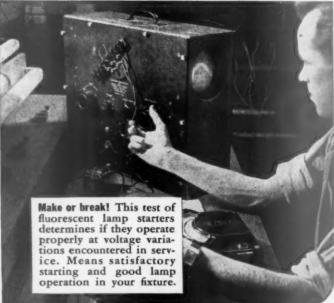


Hot box! Into this oven goes a ballast for temperature rise tests. Those that rise more than 50 degrees C. are not certified. This insures longer ballast life—better operation of your fixture.



On time! Checking starting time of lamp starters at 110 to 130 volts...a test made not only at E. T. L., but weekly by E. T. L. inspectors at the factories. Double-check on dependability!





### **FLEUR-O-LIERS**

CERTIFIED FIXTURES FOR FLUORESCENT LIGHTING

Participation in the FLEUR-O-LIER MANUFACTURERS' program is open to any manufacturer who complies with FLEUR-O-LIER requirements



#### NO TRICK

to erase neatly with Arkwright Tracing Cloths! They're "thickskinned" enough to take erasures without wearing through. And they don't smudge.

#### NO KICK

from engineers about hard-to-read blueprints when Arkwright Tracing Cloths are used! Highly transparent, they always reproduce sharply and clearly.



#### THEY CLICK

with everyone...draftsmen, engineers, blueprinters. Try Arkwright Tracing Cloths yourself — you'll like them, too! Arkwright Finishing Co., Providence, R. I.





Sold by leading drawing material dealers everywhere

Ankunight TRACING CLOTH

AMERICA'S STANDARD FOR OVER 20 YEARS

#### Pulp and Paper Critical

(Continued from page 292)

Mr. Nichols revealed. "On the other hand, ordinary kraft wrapping paper output is down about 40% below last year, leaving barely enough to meet industrial needs. For the second quarter of 1944, monthly production of special industrial papers will be about 35% greater than in 1942. The bulk of these types of papers are for military purposes."

#### Controls—How Long?

(Continued from page 84)

lowed the covered wagons west and built the cities of the plains, the mountains and the Coast. Venture capital developed the automobile and

created its industry.

In the past dozen yars, venture capital has been driven increasingly from the market place. Gains no longer accompany risks. Government takes the gain in taxes; the losses are yours to pay. Under present tax controls, gains are practically impossible. Therefore, risks are not taken. Therefore, equity money is not provided for the expansion of new industries. Therefore, the expansion of most industries is made out of such surpluses as they can accumulate.

By slow degrees the public learns that savings invested in corporations create jobs. They learn that excessive taxes which impoverish corporations also create unemployment. It is inevitable that in the generations ahead of us corporations that create jobs will not be penalized and destroyed for doing so. Even a 10% normal tax with no surtax and no excess profits tax will be considered high and against the public interest by future generations.

Every American knows monopoly is bad for all of us, including those who enjoy it. Labor has a monopoly in America. This monopoly has been used to limit production, to increase costs, to set up duplication under Government direction. In 271 cases out of 291 referred to the War Labor Board, the Government granted absolute monopoly to the union and required membership as a condition of employment.

If this postwar pattern follows the postwar pattern of every other postwar period, prices will decline

(Continued on page 296)

## MEAT & POTATOES



Before the war we accepted big, juicy steaks as a part of our every-day lives. We ordered them... got them... and enjoyed them, without a thought of the day when a steak might be a rare treat.

The same thing happened to Brass, Bronze and Copper. For years these metals met the exacting requirements of peacetime industry. Then, to crush the vicious forces of would-be world rulers, American industry converted for war.

The need for Western metals neces-

sitated stepping up our production time after time in our mills at East Alton, Ill., and New Haven, Conn. Exacting specifications were met and are continuing to be met so that the fighting men of the Allied Nations will have all the ammunition and other tools of war that they need.

Possibly Western metals can help you in meeting war requirements now and peacetime requirements later on. We will do everything we can to meet your specifications ... now and later.



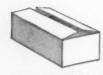
Western BRASS MILLS

Division of WESTERN CARTRIDGE COMPANY, East Alton, Ill.



### Belle of the Beach .. in 1904





General Corrugated Box





General Cleated



#### ENGINEERED SHIPPING CONTAINERS

#### General BOX COMPANY

GENERAL OFFICES: 48 W. Illinois St., Chicago, Ill. DISTRICT OFFICES AND PLANTS: Brooklyn, Cincinnati, Detroit, East St. Louis, Kansas City, Louisville. Milwaukee, New Orleans, Sheboygan, Winchendon. Continental Box Company, Inc.: Houston, Dallas.

SHE'S lovely, adorable . . . but she's just not up to modern standards. (We mean her suit, of course.) Today, many a fine product is still packed in "pantaloon" containerswhich do not meet today's requirement of economical product protec-

General Engineered Shipping Containers are designed by experts. They're designed to fulfill a specific need. They're designed to save space, save material, save packing time, save dollars.

Often, General Engineers have suggested minor product changes that have resulted in a more efficient, more compact container. Results: reduced shipping space, less packing material, easier handling, increased production, substantially cut costs.

In many instances, your product and General Containers can come off your production line together. You'll want to know about General's "Part of the Product" plan.

Write General Engineers today.

Send for new booklet, which illustrates General Box Company's "Part of the Product" plan. Write today.



#### Controls—How Long?

(Continued from page 294)

after a boom of several years. If labor prices remain rigid, labor will be largely unemployed or the value of the dollar will be further diluted.

#### Money Controls

In 1940, Alvin Hansen said that a national income of \$100 billion would insure full employment and that we ought to bring the national income to that point. Dr. Hansen, as you know, is the apostle of spending who has said that we don't owe the national debt because we owe it to each other. He is economic adviser to the Board of Governors of the Federal Reserve Bank.

Now many people say that the national income must be \$200 billion, and Mr. Murray of CIO has said that it should be \$300 billion. It is possible to reach a national income of \$300 billion through continued deficit spending and by printing paper money. It is the production of goods and services, not the expansion of debt, that is needed. Debt expansion must be controlled. Controls on production must be taken off if the nation is to prosper.

This expansion of debt is a sickness that no economic sulfa drug or penicillin can cure. It will take the courage of statesmanship. When the Government talks of total income, it goes back to Jamestown, and Plymouth Rock. All the wealth we have is the sum of our savings since then. The Government adds nothing. It

#### only redistributes.

To end Government controls that retard production, a plan has been prepared. Dr. Harley Lutz, Professor of Public Finance, Princeton University, good friend, and possibly the ablest tax authority in America, is the author.

Tax Program

His plan would take all taxes off corporations so that investments could make jobs. It would cut out needless bureaus and all subsidies of the Government. The plan would increase production and employment by permitting corporations and small business men to live and employ labor.

The increased production resulting from this tax would make possible a national income of at least \$125 billion. When subsidies to agriculture, to the States, and for relief are taken out, \$125 billion should be adequate income and \$15 billion should pay the total bills of

(Continued on page 298)

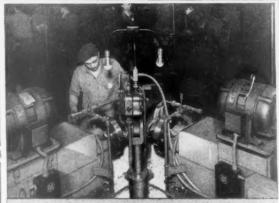


There are several important reasons why, among qualified pipe welders, Midwest Welding Elbows have earned a reputation for exceptional dimensional accuracy and uniformity. One reason is because the included angle of 90° or 45° between the machine-beveled ends is always exact . . . both ends are simultaneously machined as shown at the right. The elbow's final sizing in compression makes it possible for the fixture to clamp it in accurate position—so the center-to-end dimension is always the same.

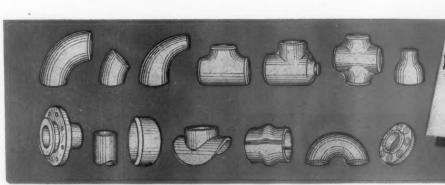
For data on all the advantages of Midwest Elbows... and the other Midwest Welding Fittings...ask for Bulletin WF-41.

#### MIDWEST PIPING & SUPPLY CO., Inc.

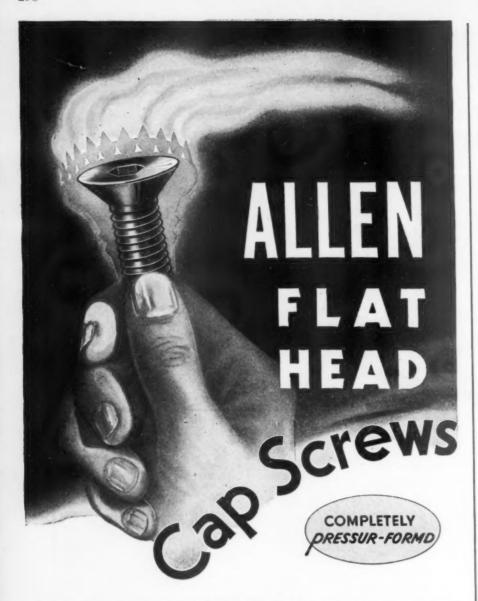
Main Office: 1450 South Second St., St. Louis, Mo.
Plants: St. Louis, Passaic (N.J.) and Los Angeles
Sales Offices: Chicago—645 Marquette Bldg. \*Houston—269 Shell Bldg.
Los Angeles—520 Anderson Street \* Tulsa—533 Mayo Bldg.
New York—(Eastern Division) 30 Church Street



Shown here is one of the machines especially built by Midwest for simultaneously machine-beveling both ends of Midwest Welding Elbows and holding the included angle within extremely close limits. Special fixtures and special tools were also developed for this work. Similar machines with three heads are used for finishing Midwest Tees.



WELDING FITTINGS
IMPROVE PIPING DESIGN,
SAVE TIME AND
REDUCE COSTS



This Cap Screw design lights your way to attain great rigidity of grip, while attaining flush surfaces of machine parts and assemblies. Sets up flush and true when seated in countersunk hole. It's "pressur-formd" by Allen processes from end to end so the steel-fibres are continuous and uncut under the head, to accentuate strength of the socket.

Threads also are pressurformd, which makes the axial fibres of the steel conform to the contours of the thread profile, with greater resistance to stripping. Thread tolerances are held to a high Class 3 fit, for a high degree of frictional holdingpower under vibration



Obtainable as a part of the ALLEN Line from your local Industrial Distributor. Ask for samples, with dimensional data on available sizes. Inquire, too, of your Allen Distributor about advantages of Allen Socket Head Cap Screws, Hollow Set Screws, Socket Head Shoulder Screws and "TRU-Ground" Dowel Pins.

THE ALLEN MANUFACTURING COMPANY HARTFORD, \* ALLEN \* CONNECTICUT, U.S.A.

#### Controls-How Long?

(Continued from page 296)

the Federal Government and allow \$1 billion for debt retirement.

Dr. Lutz's plan is recommended by the Tax Foundation. It merits your study. It would require 2,000,-000 politicians to go to work.

The balanced budget offered by Dr. Lutz could end all controls of statism; otherwise we will have in America the statism which we are fighting to destroy in all parts of the world. Labor, agriculture and industry, because of their achievements in war and in peace, are entitled to be free.

What will the postwar controls be?

Are you to seek social security that destroyed France, or opportunity that made America?

#### Collectivism Delays Recovery

1 1 1

(Continued from page 98)

3. The total number of employed will therefore decline during these first two or three years of peace.

4. The decline in the number of those on war pay rolls will then cease, however, and the cumulative growth in peace employment will cause total employment to expand during a long period of postwar prosperity.

It is tentatively my idea that if the New Deal element wins in 1944, the policy of government would be unfavorable to business expansion until some such time as 1948. Now suppose that the war ends in 1946. That would mean the low point of the first postwar recession sometime in 1947. Then if it became apparent that Roosevelt would not be reelected in 1948, which is a development that would occur in 1947, the result would be a great pick-up in business and an expansion in the shape of a postwar boom which would begin in 1948.

If in 1944 the New Deal element is at last put in its place, however, this time-schedule will be speeded up and expansion will be quicker. Postwar planning would be helpful to enterprise and productive employment. The low point in the first postwar recession would not be so low. Prices and profits would thereafter rise faster and farther. Production would then reach a new all time high.

## HOW TO GET SERVICE...when it's a question of BRASS



If it's a problem involving the use of brass (or other copper alloys), you'll find Chase warehouse service especially handy these busy war days. A phone call to the nearest Chase Sales Service Office—usually a short distance call—puts you in touch immediately with the nationwide resources of this great mill organization.

For Chase warehouses are equipped to render complete sales service—information or advice, and quick delivery from warehouse stocks...saving you valuable time as well as costly production delays. Should you have a

special purchasing problem, you can entrust it with confidence to fast-moving Chase research.

Whether it's help you need in working with brass, or speedy shipment, simply reach for your phone and ask for "the Chase warehouse, please." It's good business practice—in peace or war.



Remember —
CHASE SERVICE
IS AS CLOSE AS
YOUR PHONE

#### CHASE BRASS & COPPER CO.

Waterbury, Connecticut

SUBSIDIARY OF KENNECOTT COPPER CORPORATION

ALBANY† ATLANTA† BALTIMORE BOSTON CHICAGO

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CINCINNATI CLEVELAND DETROIT HOUSTON INDIANAPOLIS†
KANSAS CITY, MO.†
LOS ANGELES
MILWAUKEE



MINNEAPOLIS NEWARK NEW ORLEANS NEW YORK PHILADELPHIA PITTSBURGH PROVIDENCE ROCHESTER† SAN FRANCISCO
SEATTLE
ST. LOUIS
WASHINGTON †
Indicates Sales Office Only

This is the Chase Network - handiest way to buy brass





#### LOCK WASHERS

Diamond G Lockwashers have positive spring action, controlled tension — built to hold tight . . . last longer. Available in all finishes and sizes from No. 0 to 3"a complete AN 395 series.



#### **HEAT TREATING**

Heat treating of small parts up to 2" x 2" that can help you speed your production . . . reduce rejects . . . and cut costs. For quick, economical heat treating check with us first.



#### STAMPINGS

Whatever your requirements are in small stampings, Diamond G has the equipment . . . engineering "know-how" . . . and service to produce parts quicker, better and at low costs.



#### FLAT WASHERS

Flat washers in all sizes and finishes. Quick service and deliveries are yours when you order from Diamond G. For details on how Diamond G can help you solve your parts problems write to . . . GEORGE K. GARRETT CO.

1421 Chestnut St., Philadelphia 2, Pa.

DIAMOND G PRODUCTS

#### **Negotiating Settlements**

(Continued from page 109)

of the claim may be practically an invoice for hours expended at the agreed rate, so long as this amount does not exceed the price ceiling for the number of parts undelivered. Your termination inspection of these claims was presumably completed when you placed the order and

agreed upon the rate.

In the review of claims over \$10,-000, more accounting detail is required than many purchasing officers should undertake. I suggest the possibility of a prime contractor's auditing committee composed of the purchasing officer, cost accounting officer, and the credit manager or a representative of the treasurer's office. If such a board in your company reviews and ratifies all subcontract claims over \$10,000, I believe you will find our management ready to certify and the contracting officer inclined to authorize immediate payment.

#### Vital Importance of **Material Lists**

I have purposely omitted reference to the material list up to now as it is the only part of the termination procedure which does not vary with the amount of the claim. A material list can be prepared properly and in the required detail in the beginning, or repaired repeatedly with consequent delays and more potential irritation than a bed of poison ivv.

Failure to adequately instruct a subcontractor led, in one case, to the inclusion in a claim of all scrapped items, worn-out tools, and extra costs for all orders for such parts on completed contracts for three years back. Sometimes, such inclusions

are hard to ferret out.
One material list "bugaboo" is the necessity of showing applicable specification numbers, whether Army, Navy, Federal, S.A.E. or A.S.M. on raw materials.

#### Use Specification Numbers

To assist in the instructions of subcontractors, my company is preparing check lists showing for each commercial designation of metals, the applicable specification numbers. If you prepare such a table of our materials, you can then instruct your subcontractor to use the numbers in the particular column required for a specific settlement.

A "standard" termination clause

(Continued on page 302)

PROGRESS Conveyor Belts

UBBER

N THE last hundred years, since the discovery of vulcanization, the progressing world has become increasingly dependent on rubber. Natural and man-made rubber both have those unique properties—elasticity and resilience. possessed by no other material. These two physical characteristics possessed by no other material. These two physical characteristics have made it invaluable in products for industry, transportation

When chemically and physically reinforced, then vulcanized, rubber becomes capable of a myriad of tasks. Huge Republic and even domestic life.

rubber becomes capable of a myriad or tasks. riuge Republic conveyor belts handle loads of rock, high pressure hose helps drill for oil, Republic cotton jacketed hose fights fire, radiator

Republic's years of research and manufacturing experience, exclusively in mechanical rubber products, assures industry of hose cools automobile engines.

quality when a Republic Distributor handles the order.





Fire Hose



HOSE . BELTING . MOLDED GOODS

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. EXTRUDED PRODUCTS

LEE RUBBER & TIRE CORPORATION



## VOAT ON CLEANING FOR BUSY PURCHASING AGENTS

#### . One Way to Evaluate

an industrial cleaning service is to ask this question: "Can it supply you with the right materials when you need them . . . and the methods to meet your cleaning requirements particularly where the character of work is constantly changing?"

#### Oakite Technical Service Provides Answer for Thousands of Concerns

Because it provides a wide range of carefully engineered cleaning and related compounds of uniform, high quality, backed by a Nation-wide personal service to see that you secure all the advantages and economies that result from their use, thousands of concerns will tell you Oakite Technical Service is today's best answer to your question.

Whatever the character of your work, we will appreciate the opportunity of serving you and giving you the full benefit of our 35 years' experience. Inquiries invited and promptly answered.

OAKITE PRODUCTS, INC.
54 Thames St., NEW YORK 6, N. Y.
Technical Service Representatives Located in All
Principal Cities of the United States and Canada



Buy Bonds for Victory!

#### **Negotiating Settlements**

(Continued from page 300)

applied to all purchase orders may seem to have worked in your case, but it should be no bed upon which the purchasing officer can rest his procedure. It will not itself terminate the cancelled contract. Any standard termination clause so complete as to include the answer to all the problems of termination would surely be rejected by most suppliers and unread by many subcontractors. A less complete clause just fails to convey the necessary requirements and is actually no protection to either party. Why not go back to the financial classification and institute a policy of negotiating all purchase orders and subcontracts of \$10,000 and over with the principal contracting clauses of your own prime contract. The smaller order may or may not require any clause, depending upon the reliability of the subcontractor. The clause itself is not at fault; it is its use as a backdrop to cover a messy backstage which may have to be all cleaned up before the show is over.

#### Looking Ahead

(Continued from page 93)

rubber in New York before the war for about eleven cents per pound, with about one cent profit. A considerable proportion of large estates could not do as well. Small native estates have little fixed investment and small labor costs. On a low market, these are the most tenacious of the plantation rubber producers. Except for these small operators, it is likely that the plantations, postwar, will be faced with much higher costs. Labor rates will likely increase from 50% to 100%, with corresponding increases in costs of management and administration and much greater increases in local taxes. An increase of two to four cents a pound would not be unexpected, particularly in the early years, after rehabilitation. This would mean a New York cost of from thirteen to fifteen cents per pound. Continued lower prices might make all the rubber "go native

GR-S synthetic probably costs between 40 and 50 cents a pound at

(Continued on page 304)

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Our Prod lowin

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Like yours, our first job is to do all we can to speed war production. So, if you need steel, steel products, machinery and equipment, we'll get it to you quickly if at all possible—subject to priority requirements. A call to us has broken many a production bottleneck - helped speed many a war order.

Even today, our stocks are large. They include National Emergency Alloy Steels, which have proved so successful. Try us. We welcome your inquiries. Phone, write or wire our nearest warehouse.

#### WANT AIRCRAFT STEELS?

Our Chicago Warehouse is designated by the War Production Board as a warehouse to distribute the following Aircraft Steels:

#### WD-X-4130 SHEETS

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Open Hearth, Pickled and Oiled to Spec. AN-QQ-S-685. All gauges .016 to .50, sheets 18" x 72".

#### STAINLESS SHEETS

#### STAINLESS STEEL BARS

Spec. AN-QQ-S-772. Spec. AN-QQ-S-771. These steels are for use in airplanes and available at our Chicago Warehouse only.

#### WELDING ELECTRODES-ALL TYPES

These are available through all our warehouses.

CHICAGO (90). BALTIMORE (3), ROSTON (34). CLEVELAND(14).

MILWAUKEE (1),

ST. LOUIS (3), TWIN CITY,

1319 Wabansia Ave., P. O. Box MM Bush & Wicomico Sts., P. O. Box 2036 Teletype BA. 183 176 Lincoln St., Allston, P. O. Box 42 Teletype BRTH. 10 1394 E. 39th St.,

4027 West Scott St., P. O. Box 2045 Teletype Mi. 587 NEWARK (1), M.J., Foot of Bossomer St., P. O. Box 479 Teletype NK. 74

PITTSBURGH(12), 1281 Reedsdale St., N. S. 21st & Gratiot Sts., P. O. Box 27 2545 University Ave., St. Paul (4 Minn. Teletype STP. 154

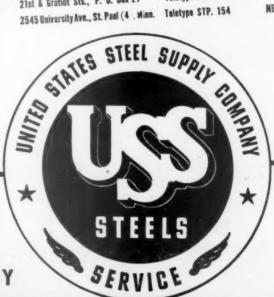
Teletype CG. 605

Teletype CV. 153

Telstype PG. 475 Teletype SL. 384

BRUnswick 2000 GILmore 3100 STAdium 9400 HEnderson 5750 Mitchell 7500 Bigelow 3-5920

REctor 2-6560 - BErgen 3-1614 CEdar 7780 MAin 5235 NEstor 2821



UNITED STATES STEEL SUPPLY COMPANY

NE-8630 SHEETS

Open Hearth, Pickled and Oiled to Spec. AN-S-12.

All gauges .016 to .50,

sheets 18" x 72".

UNITED STATES STEEL

#### A MESSAGE FOR THE

## P.A.

For general purpose metal cutting, here is the blade that will satisfy . . .

#### GRIFFIN SOFT CENTER

FOR STIFFNESS
FOR FLEXIBILITY
FOR CUTTING ABILITY

Their soft, but tough center insures maximum flexibility and minimizes breakage.

Their hard, firm back gives them the required rigidity.

Their extra hard teeth impart the best cutting and longest wearing qualities.

GRIFFIN Soft Center Hack Saw Blades will not stretch, sag nor bind in cutting.

The GRIFFIN Soft Center feature is an exclusive GRIFFIN development backed by 64 years of specialized experience in blade making.

Other GRIFFIN blades are Molybdenum High Speed Steel and Tungsten High Speed Steel and Soft Back.

1880



1944

SOFT

VERY HARD

Trade Ma.

JOHN H. GRAHAM & CO., INC.

General Sales Agent

135 Duane Street • New York City

Made by G. W. GRIFFIN CO., Franklin, N. H.

GRIFFIN

Hack Saw Blades

#### Looking Ahead

(Continued from page 302)

present. This is chiefly because of high-cost alcohol used in making butadiene and because of initial operating inefficiencies. It is estimated that butadiene and styrene can each be produced at about 8 cents per pound by efficient methods. With plant values adjusted to post-war replacement costs, rubber could be produced for 151/2 cents. The cheapest source of industrial alcohol would appear to be from molasses imported from the West Indies. It may be important in the post-war period to retain two basic sources of butadiene supply, both from the standpoint of future economies and because of butadiene plant equipment now in use. The importation of mo'asses on an adequate scale would, with byproduct utilization, appear to offer promise of butadiene at least competitive with the petroleum supply and perhaps cheaper. These or other cost improvements are certain to come before any large surplus of rubber is available.

#### Competitive Factors

It would seem, then, that the e'ements for cost competition, between natural and synthetic rubber, are inherent in the situation. It remains to be seen which product wins the cost battle. However, the synthetic process has the well-known advantage enjoyed by chemical processes. in that it is capable of being changed quickly and relatively cheaply. It seems certain that synthetic will check wild price fluctuations and tend to create a progressive decline in rubber prices. The competitive quality of synthetic has every opportunity for improvement, in the hands of a progressive technical industry. Continued large demand over a period of several years, provides all the necessary justification for technological improvement.

If the synthetic consumption figures, here indicated as future possibilities, are rea'ized, there are many accessory materials which must be provided in large quantities, for more than the emergency war period. Such items as carbon black, rubber accelerators and rayon fabric are used in greater quantities with synthetic than with natural rubber. In some cases the productive capacities are inadequate or are being supplied on an emergency conversion basis. Manufacturers of these materials

(Continued on page 308)

# 648 HARD-WORKING POUNDS of Welding Ability

There is no substitute for active metal in producing welding current. That is why this P&H welder out-performs other welding machines. Compare its weight, its range, its operating advantages - on a dollar and cents basis.



- WSR

(Welding Service Range)

RATINGS

BASED ON ACTUAL DELIVERED OUTPUT OF USABLE WELDING CURRENT

30-285 AMPERES CAPACITY

Here is a machine in a class by itself, designed to serve the widest possible range of applications in general welding practice. It's an "in-between" capacity that overlaps the ability of smaller and larger machines. It's a standout in performance and value!

#### WRITE FOR FULL DETAILS

Why postpone the advantages and the economies this better welding service can bring you? Write for all the facts about this 30 to 285 ampere capacity welder.

#### A COMPLETE ARC WELDING SERVICE

DC WELDERS AC WELDERS WELDING PRODUCTION ELECTRODES POSITIONERS CONTROL SYSTEMS





"VISI-MATIC"

CALIBRATION

SINGLE HEAT

CONTROL

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NEW! . . .

Two electrodes which operate on both AC and DC welders! Conform to AWS and ASME class E-6010 and 6011 and E-6012 and 6013. Write for information about AC-1 and AC-3 electrodes.

Gen. Off.: 4577 W. National Ave., Milwaukee 14, Wis.



Sixty Years of Service

Canadian Distribution: The Canadian Fairbanks-Morse Company, Ltd.

## We Can Make These For You... Now

US HELP DEVELOP NEW USES TO MEET YOUR NEEDS. WE ARE EXPER-IENCED PAPER CONVERTERS... HAVE A NEW, UP-TO-DATE PLANT ...AND ARE IN A POSITION TO SERVE YOU WELL AND PROMPTLY



#### INDUSTRIAL GASKETS; DIE CUT SPECIALTIES

Pierce industrial gaskets: manufactured to precision dimensions from paper, felt, cork, asbestos, synthetic rubber, leather or special compositions; meet specifications for resistence to oil, water, gasoline, heat, pressure. Die-cut specialties: produced by rotary press, platen press, punch press, or drawing methods from paper, felt, cork, special compositions.

#### PACKAGING AND SHOP PRODUCTION ENVELOPES

Pierce packaging envelopes for holding small flat parts; metal-top envelopes for secure fastening and convenient reopening; waterproof and greaseproof envelopes to meet all specifications; duplex shop-order envelopes — with protective glassine panels: the modern method of keeping blueprints and production orders together during work in progress.

#### NEW...SAF-T-PAK BOXES FOR SMALL PARTS

Pierce Saf-T-Pak Boxes: specially designed to individual requirements for the protection of small precision parts and other fragile items easily damaged in shipment. Can be produced from kraft, chipboard, or special compositions in a wide variety of forms with die-cut cells, cushion liners, partitions, other construction features of protective packaging.

#### SPIRAL-WOUND PAPER TUBES AND CANS

Pierce spiral-wound tubes and cans: in diameters from 36" to 6"—any required length—from waterproof paper, kraft, chipboard, special compositions. Also, Pierce Saf-T-Pak tubes with felt liner for protection of fragile parts in shipment. Pierce protective caps and tubes for male and female threads: made in any size, waxed or plain.



\* WRITE FOR SAMPLES AND COMPLETE INFORMATION

Manufactured by PIERCE PAPER PRODUCTS CO., 2728A AUBURN STREET, ROCKFORD, ILLINOIS



The special fastening illustrated here may not look tough to everyone...but design engineers will recognize immediately this job called for fastening experts—both in tool design and cold-forging technique.

Scovill has what it takes in cold-forging skill to assure delivery of fastenings to meet your exact requirements—with maximum savings in money—materials—motions.

What's more—you can rely on Scovill judgment to help you determine the fastening best suited for your assembled product. Make use of Scovill's many years of experience by calling in one of our Fastenings Experts. He will help you not only choose between "special" and "standard", but in designing a part to fill your specific need.

Keep your fastenings problems from becoming really tough—as other Scovill customers have done—by calling in one of our Fastenings Experts when your product is still in the design stage.

## SCOVILL MANUFACTURING COMPANY WATERVILLE SCREW DIVISION

WATERVILLE 48, CONN.



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NEW YORK, Chrysler Building - DETROIT, 714 Fisher Building - CHICAGO, 1229 W. Washington Boulevard - PHILADELPHIA, 18 W. Chelten Avenue Building PITTSBURGH, 2882 W. Liberty Ave. - SYRACUSE, Syracuse - Kemper Insurance Bidg. - LOS ANGELES, 2627 S. Soto St. - SAN FRANCISCO, 434 Brannan St.



Wheeler Globe-Type Fixtures. Dust-tight and vaporproof. Made in standard styles for 75 to 200 watt lamps. Same high safety and lighting standards as Vapolux unit.

### for Class II, Group G Locations!

HEELER

In lighting fixtures for hazardous locations, the advantages of Wheeler "Skilled Lighting" show up even more outstandingly than in more common types of reflectors.

Wheeler Vapolux and Globe-Type Fixtures comply with all requirements necessary or desirable in class II-G locations. Also, they give you the high measure of light output, durability and ease of installation and maintenance that can only come from better engineering, backed by long experience. In every detail, Wheeler Lighting is "Skilled Lighting" developed with the experience of over 62 years' specialization!

Write for complete Catalog 50 containing full details of these high-efficiency, high-convenience units for Class II, Group G locations. Wheeler Reflector Company, 275 Congress St., Boston 10, Mass.... New York City. Representatives in principal cities.

Distributed Exclusively Through Electrical Wholesalers

### Wheeler COMPANY

Lighting Equipment Specialists Since 1881

#### Looking Ahead

(Continued from page 304)

have been reluctant to plan permanent expansions in view of the general belief that they would be superfluous after the war. Such manufacturers and their customers would do well to reconsider the whole situation in the light of a more permanent demand.

The future of the rubber industry appears as bright as any that can be mentioned, and far above the average. It is quite probable that the new synthetic industry, which has matured so rapidly under the stress of war, will prove almost as great a stimulus to the industry's future progress as did the advent of the popular price automobile. With an enlightened and stabilized world economy, with provision for free enterprise and private initiative, it seems clear that tremendous growth is still possible.

#### Chemical Transmutation of Wood

(Continued from page 115)

scratches or dents to be easily removed by smoothing and rubbing, without the necessity of matching, filling, varnishing or refinishing.

6. By compressing certain items to final size, one eliminates machining costs and at the same time applies a surface finish. This may be applicable to flooring, tab e and desk tops, other furniture items, machine parts, rules, levels.

7. Increased durability or resistance to water, chemicals and solvents can be translated into longer life and less replacement for such items as laundry and chemical plant equipment, wood tanks, window, screen and door sash, and machine parts.

The transmutation process permits such woods as soft maple, poplar, tupelo gum, a number of pines, and even cottonwood, to be turned to useful jobs, releasing hard maple, oak, walnut and other less available and more expensive woods for more essential uses. In turn, the hard woods themselves can be improved.

Tidewater red cypress, with its attractive grain, and California redwood with its satin-like texture and warm red color are two examples of soft woods which through the methylolurea treatment may now be

(Continued on page 310)



The "Latest Thing" Then...
The Height of Fashion Now...

Brass is always Modern

Hooks and eyes were the streamlined fasteners of the 1800's. These devil's devices were the curse of husbands, but fashion decreed them, and wives did the rest. At the same time, utility decreed that . . . since each fastening must stand considerable strain, yet have resilience to resist breakage . . . the logical metal was Brass.

Now, a hundred years later, we have the easiest and smoothest and quickest of all fasteners...the pull-tab slide type...delight of clothes designers and merchandising men, pet of women and pal of men. And here again Brass is found, for these reasons: Resilience prevents sticking of the interlocking teeth. Then, too, the incorruptibility of Brass means that fasteners won't corrode in wet weather or damp climates. And in many cases the golden color of the Brass fastener is worked into the design of the clothes. So styles come and go, but Brass remains, in various changing forms.

These exclusive characteristics of Brass are good things to file in your mind for future reference. Remember, too, that Bristol Brass will be able to supply you with any alloy your product-uses require... in sheet, rod, or wire of uniform dimensions and quality. In fact, why not discuss the preliminaries now? Write to The Bristol Brass Corporation, Bristol, Connecticut.

#### **BRISTOL BRASS**

BUY BONDS TO BUY BRASS FOR BULLETS



#### and WIRE CLOTH PRODUCTS



SOLE responsibility by one company for workmanship, economy and scheduling of

your wire cloth requirements.

Drawing the wire, weaving the wire cloth, fabricating the product, all in one continuous production line.



Send Michigan Your Inquiries

Established 1860

## MICHIGAN WIRE CLOTH CO.

2100 HOWARD . DETROIT 16

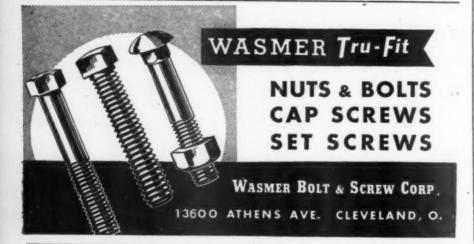


Distinctive worm gear tightening action provides powerful belt-like pull-up. Uniform pressure all around prevents leaks, Can be put on or taken off hose in place on pipe. Can be re-used. No loose parts. Compact design. Extremely long take-up. Made in sizes from ½" up. Write for circular.

Aircraft Standard Parts Co.

NINETEENTH AVENUE, ROCKFORD, ILL.







### Welded Stainless Tubing

Uniformity in roundness and in quality of welding characterizes Pittsburgh Piping Welded Stainless Tubing. Available in most stainless alloys, in sizes 4" O.D. to 14¾" O.D., and in wall thicknesses ranging from  $\frac{7}{64}$ " to  $\frac{1}{2}$ ". Write for data sheet.

PITTSBURGH PIPING & EQUIPMENT CO. 10 FORTY-THIRD ST., PITTSBURGH, PA.

### Chemical Transmutation of Wood

(Continued from page 308)

employed for paneling, furniture, flooring and other applications where color and beauty of grain are of major importance. Formerly they were too soft for such uses. Treatment will make them harder and more durable than oak.

Summarizing the implications of the new process, this development means that it is now practical and feasible for wood to be re-madeengineered to specifications of service and appearance. The shackles of unalterable properties and limitations to certain species can now be cast aside. Industry can create in a few days woods harder than ebony, which nature takes centuries to grow. This new substance, transmuted wood, which is made from wood and looks like wood, can successfully compete with plastics and metals that for several years gradually have been pushing wood into the discard for many purposes. Plastics and metals were fashioned to the conditions demanded of them, even to looking like wood. Now wood can be formulated for greater interchangeability and to achieve fields of usefulness extending well beyond the frontiers to which it has hitherto been limited. The lumber industry now faces its greatest opportunities along with its greatest competition. It has several new and potent weapons, among them this new wood born of chemistry.

#### Redistribution Policies

(Continued from page 112)

turer's and the supplier's original guarantee as to quality. In addition, it does not always exist in single lots in the exact quantity needed by a buyer. For various types of producers goods some production pena'ties may be involved when building up a big lot from a series of unrelated small lots. For many of the large consumers, at least, there is little profit incentive to use this material. In the final analysis, I think the biggest incentive for you, as the buyers for American industry, is the desire to consume these surpluses now so that they will not be added to a future larger increment.



#### They come out shooting!

Of course, they were built to come out shooting but, during countless miles over water in cargo holds, corrosion might have attacked and destroyed their power!

Sealing out the elements that cause corrosion is the No. 1 job of MYSTIK Waterproof Self-Stik Cloth Tape. How well it does its job is proved by the hundreds of major producers of war materiel—ordnance, food and medicine—using MYSTIK as an approved means to

protect the condition and quality of their products from factory to the point of actual use.

Investigate the application of Mystik Self-Stik Cloth Tape to your problems of product protection.

A request on your letterhead will bring you a sample roll. Address: Department PR, MYSTIK TAPE DIVISION, Chicago Show Printing Co., 2635 No. Kildare Ave., Chicago 39.

MYSTIK Self-Stik Cloth Tape is the result of nine years of development of pressure-sensitive adhesive products, originating with the famous MYSTIK "Oil-change" sticker, widely used by major oil companies and automotive manufacturers.





#### **DEMURRAGE REDUCED 75%**

A COMPANY-WIDE campaign to speed the loading and unloading of railroad cars made available 1,000 extra car days a month to other wartime shippers last year, Andrew H. Phelps, Vice President in charge of Purchases and Traffic, Westinghouse Electric and Manufacturing Company, reported recently.

"Over the period of the year that amounted to releasing 12,000 cars working for one day or 12 cars working for 1,000 days," the executive added at a ceremony honoring members of the traffic and shipping department at the East Pittsburgh and Trafford (Pa.) plants of the Company.

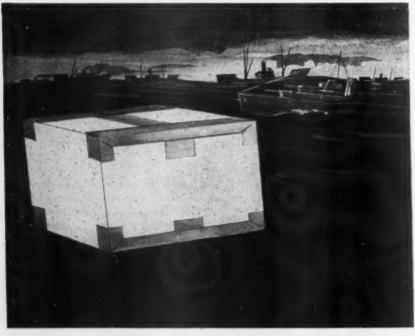
Mr. Phelps, explained that an important element in hastening the "turnaround" of railroad cars was a drastic reduction in demurrage, which is the "rent" a railroad charges a receiver or shipper when a car is detained beyond the time allowed to unload and load.

detained beyond the time allowed to unload and load. "In demurrage alone," the vice president added, "we cut our cost during 1943 to less than one-sixth of the demurrage in 1942 despite the fact that increased war production made necessary the handling of considerably more freight.

E. W. Simpson, head of the traffic and shipping department at the two plants, accepted on behalf of his staff a certificate for overall "outstanding transportation performance" last year. Mr. Phelps made the presentation.

"Only cars that are rolling move materials of war closer to the spearhead of attack on our enemies," Mr. Phelps said. "The efficient handling of traffic, as demonstrated in our largest traffic operation, evidences full compliance with the request of the Office of Defense Transportation and the Interstate Commerce Commis-

(Continued on page 314)



## DELIVERING THE GOODS

Supplies and instruments of war are worthless unless they reach the front. Rugged SAFETEX GUMMED TAPE is doing its part, every hour, to deliver the goods. Sealed with SAFETEX TAPE every carton is bound to get there, securely and undamaged. CENTRAL PAPER CO., MENASHA, WIS.

#### SAFETEX TAPES ...

Regular SAFETEX kraft paper sealing tape.
Regular SAFETEX tape on waterproof paper backing.

Corded SAFETEX - string reinforced waterproof paper with regular SAFETEX gumming.

SOLSEAL-waterproof paper backing with waterproof gumming.





et d. S.



### ... IF YOU ARE INTERESTED IN SEAMLESS AND DROP FORGED STEEL PRODUCTS

Anticipating every practical calculation or analysis that may confront you, the buyer of Seamless and Drop Forged Steel Products, The Harrisburg Steel Corporation has compiled this Catalog to serve with the same efficiency and accuracy that you have found in all Harrisburg Products.

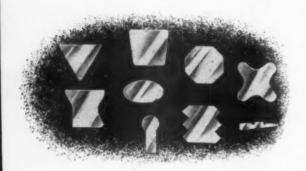
Indexed, glossarized and departmental.

ized, it is a veritable textbook for expert or apprentice. Tables of authentic S. A. E. specifications covering every product we make in whatever grade or quality you may need.

A quick-reference dictionary of our products, their ingredients and uses completes this handbook, which gives accurately illustrated descriptions of Harrisburg Products.

UCTS

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EREE	Address					
HARRISB	URG Se	amless	STEE	L PROD		



SHAPED wire belongs in production that is coming with reconversionbelongs as never before.

The Shaped Wire you plan to use may be Carbon Steel, Armco Ingot Iron or Stainless Steel. Whatever it may be, think of PAGE-for wire has always been the business of PAGE. And it has been part of our business to develop Shaped Wires to meet a wide range of special manufacturing requirements-in end section areas up to .250" square and widths up to 3/8 inches.

You will find it very much worth your while to discuss your planned use of Shaped Wire with PAGE possibly well in advance of the time of re-conversion. We may be able to help you save many precious production hours and reduce production costs.

#### PAGE STEEL AND WIRE DIVISION

Monessen, Pa., Atlanta, Chicago, Denver, Los Angeles New York, Pittsburgh, Portland, San Francisco



(Continued from page 312)

sion to conserve wartime transportation facilities." The citation presented to Mr. Simpson stated that despite wartime difficulties, demurrage at East Pittsburgh and Trafford was reduced 75 per cent below 1942. Average car detention was only 1.45 days. For the last four months of the year, this operation accumulated no demurrage.

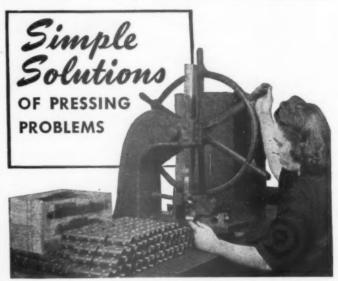
#### Second Award Goes To Sharon

The second honor for overall transportation performance during 1943 was awarded by a company committee of judges to the traffic and shipping department at the Sharon (Pa.) Transformer Division. The certificate will be presented by Mr. Phelps to A. Thomas, who is in charge of traffic and shipping at Sharon.

Along with the campaign to keep demurrage fees at a minimum, the Company helped relieve overtaxed railroad freight facilities by a continuous educational program among employes, which emphasized the accurate routing of cars, heavier loading and adequate packing and marking. The program was directed by Wesley H. Lees, Westinghouse Traffic manager.

Competition among plants for excellence in transportation performance was encouraged by establishing the overa'l awards and by creating the "Traffic Masters Club." This honorary organization's membership is restricted to traffic and shipping staffs at plants where no demurrage charges were incurred for an entire year and where the average car detention was low.

"By means of our campaign to keep railroad cars rolling in wartime, we are learning good habits of housekeeping which will continue to yield benefits and savings in peacetime," Mr. Phelps said.



Famco Arbor and Foot Presses can simplify a myriad of pressing and punching jobs. • They are low in first cost. • Low in upkeep cost (practically no attention or cost is needed for operation) • Easy to operate (girls can operate all types with ease) . Simple to set up. . Occupy FAMCO MACHINE COMPANY, 1313 18th STREET , RACINE, WISCONSIN

small floor space. There's a model and style of FAMCO ARBOR and FOOT PRESS for everylight press-ing or punching job. FAMCO engi-neers will help you select the right press for your problem from over 40 stock sizes. Write for details without obligation.

**FOOT PRESSES** SQUARING SHEARS

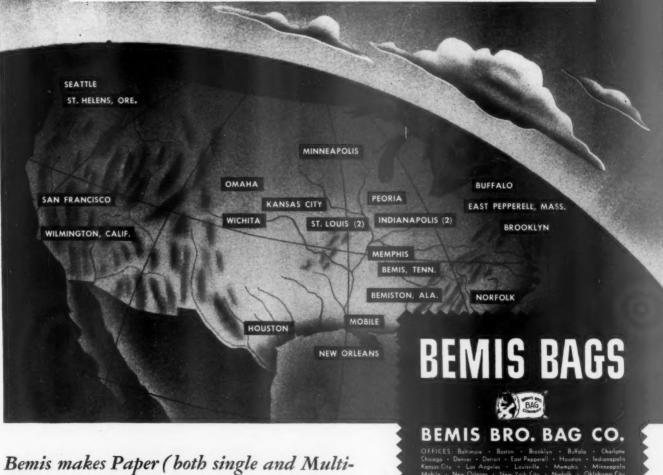


#### TWENTY-THREE BEMIS FACTORIES TO SERVE YOU

WARTIME restrictions and the tremendous movements of the many essential products that are shipped in bags naturally create a tight supply situation. It's a difficult problem to furnish all of the bags that are needed...just when they are needed.

That's why it pays to do business with a company like Bemis.

Twenty-three factories across the country mean a lot of productive capacity . . . and they also mean convenience and the best possible service under any prevailing conditions. In short, we sincerely believe that today, as in normal times, you'll find Bemis Bro. Bag Co. your most versatile, most reliable source of supply.



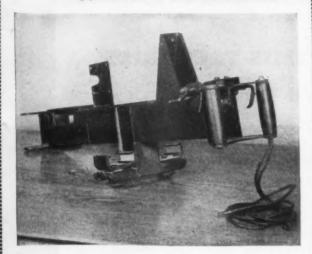
wall), Waterproof, Deltaseal, Cotton and Burlap Bags.

BAGS FOR 86 YEAR

Ti

GUN ADAPTER, for synchronizing machine guns and aerial camera . . . built by Brandt of high-tensile stainless steel . . . by stamping and welding processes . . . for use on Martin Marauders.

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Small Parts or Big Installations—

## BRANDT of Baltimore

for Precision in Heavy Plate and Sheet Steel Work

Here is an 8½ acre plant with the most modern equipment for shearing, rolling, forming, welding and completely fabricating ferrous, non-ferrous and alloy metals to your specifications. . from the lightest gauge up to and including 1¼" mild steel or 3¼" armor plate. Extensive war contracts necessarily limit our present acceptance of new business for immediate delivery.

Charles T. Brandt, Inc. Baltimore-30, Maryland.



BRANDT of Baltimore-Craftsmen in Metal Since 1890

#### SEEK IDEAS OF VALUE TO THE WAR EFFORT

THE National Inventors Council of the Department of Commerce, Washington, D. C., is repeating its call to Americans to turn in ideas of potential value to the war effort to the Government. Typical of the kind of inventive problems to which the armed services are at present seeking solutions are the following:

A durable coating suitable for field application to reduce the glare from glass surface.

An optical method of distinguishing the difference between an artificial green and a natural green.

A voice-transmitting gas mask that would permit the wearer's voice to be heard with clarity.

Protection against flame throwers.

Design of life vest that automatically inflates and turns the man on his back when he is thrown overboard by concussion and is unconscious.

Means of controlling fires in fighting tanks for a sufficient period of time to evacuate personnel. The process should not be injurious to personnel and should be manually controlled and operated.

#### QUICK FACTS ON THE GAS TURBINE

The modern constant-pressure combustion gas turbine consists in its simplest form of a compressor, a combustion chamber, and a turbine. The term "constant pressure" is used to distinguish this particular machine from the explosion gas turbine. It does not

(Continued on page 318)

## PAPER meeting wartime industrial demands

CHECK your needs-Central will forward samples

- WATERPROOF PAPERS
- ELECTRICAL PAPERS
- ☐ FLAME RESISTANT PAPERS
- GREASE RESISTANT PAPERS

  BURLAP SUBSTITUTE
- SUPER WET STRENGTH
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CUSTOM TREATED PAPERS FOR ANY INDUSTRIAL USE — IF YOU HAVE A PROBLEM WRITE US. DEPT. N-6.

CENTRAL PAPER COMPANY

MUSKEGON , MICHIGAN

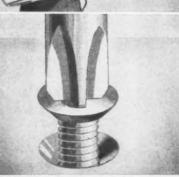
## AMERICAN Willips SCREWS

are faster...and cost less to use...because they're



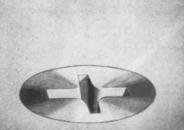
Fumble-Proof

The American Phillips Recessed Head fits firmly onto the 4-winged driver ... which can't slip out or twist out in any direction. So the faster methods of driving (spiral and power) are safe to use. No fumbling, no dropping of screws. Time is saved.



Self-Aligning

The American Phillips Screw and Driver form a single unit that is automatically self-aligning. No fussing around to get a straight start, no fatiguing nerve strain which leads to poor work that must be done over. Here again . . . time is saved.



Straight–Driving

The American Phillips Screw and Driver stay in alignment under the stress of the driving operation. So the screw can't be driven any way but straight. No burred heads, no scarred work. Screw head is set up tight and flush every time. Total time savings: UP TO 50%... not to mention savings of screws and materials.





PROVIDENCE 1, RHODE ISLAND

Chicago 11: 589 E. Illinois St.

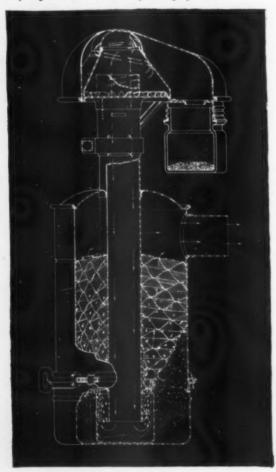
Detroit 2: 502 Stephenson Building

Put the Screws on the enemy...BUY BONDS!

## DONALDSON Oil-Washed AIR CLEANERS

#### Note These DONALDSON Features

- Non-plugging element: Manufactured from lead-coated wire. Open area of element pre-determined and can be uniformly controlled in manufacture.
- Cleaning is done by scrubbing: The element functions as a condensing chamber . . . not as a filter . . . thereby minimizing the possibilities of dirt becoming lodged in the element.
- 3. Ease of service: Under normal operating conditions, cleaning and servicing of the oil cups is all that is required.
- 4. Submerged air inlet insures displacement of oil and high cleaning efficiency regardless of load or operating speed.



- 3. One hundred per cent pressure tested.
- 6. For extreme dust conditions pre-cleaners can be provided to increase the time between service periods.

our engineers will be glad to help YOU work out the best Donaldson installation for your product. Write us . . . no obligation.

DONALDSON CO., INC.

(Continued from page 316)

mean that pressure is constant for operation at all loads, but rather that a steady flow process is used.

How does it operate?

Air is compressed in the compressor to several atmospheres pressure and then taken to a combustion chamber into which fuel is injected. The burning of fuel, raises the temperature of the compressed air, which is passed through the turbine to produce power. What about "net power?"

About two-thirds of the power produced is required to drive the compressor. Only the remainder is available for doing useful work. Obtaining appreciable net power was long the barrier to the development of a practicable

gas turbine.

Then the gas turbine is not new?

Not at all. In 1680 Bishop Wilkins, in a book called "Mathematical Magick" presented an idea for the first gas turbine. Other early inventors associated with gas turbines were John Barber (1791), Fernihough (1850), Parsons (1884) who described in his original patent an idea remarkably close to our present conception of the combustion gas turbine. In 1907 Armengaud & Lemale reported three years' successful operation in Paris of a gas turbine. In 1895 Charles G. Curtis obtained a U. S. patent on a gas turbine. In 1902 Dr. Sanford A. Moss operated a gas turbine

In 1902 Dr. Sanford A. Moss operated a gas turbine wheel at Cornell University. In 1904, General Electric operated gas turbines at both Lynn, Mass., and Schenectady. The company has been interested in the gas turbine for 40 years. Dr. Moss was instrumental in the development of the centrifugal compressor, and developed the gas turbine powered airplane supercharger which is playing an important part in the current war.

(Continued on page 320)

#### Partners in Industry's Progress

### STROM Balls Serve The Nation

Now on fighting fronts and war-production lines Strom Steel Balls are contributing to the great offensive of the United Nations. When peace is won Strom Balls will be equally instrumental in solving the problems of design and production of better peacetime products for home and industry.

For Better Rolling Mileage Specify Strom Balls



A slee

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No sary ing

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TYI Cop soft used tubi outs ning

Wid grea othe conn tion

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Useq



## COMPRESSION

#### HOW TO RECOGNIZE

A "3-piece" fitting consisting of nut, sleeve and body. Nut is cup shaped. Sleeve tapers to both sides. Body has square cut end with slight belling on inside as shown at (A) in sectional views.

#### HOW TO ASSEMBLE

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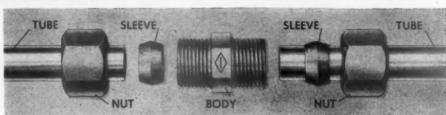
0. Illinois No special preparation of tubing necessary. Simply slip nut and sleeve over tubing and insert tubing into fitting body until it rests against shoulder. Move sleeve into position and tighten nut.

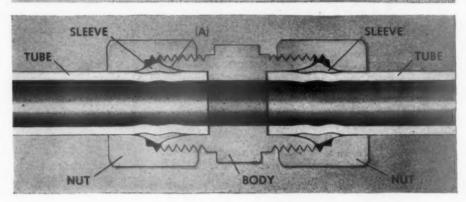
#### FOR USE WITH FOLLOWING TYPES OF TUBING

Copper, brass, aluminum and thin-wall soft steel tubing (such as Bundy). When used with Bundy or similar tubing, the tubing should be of type having a special outside tinned coating. This extra tinning fills the seam of the tubing, giving fittings a tighter, leakproof grip.

#### **APPLICATIONS**

Widely used for connecting gasoline, grease, oil, vacuum and air lines, and other low and medium pressure tubing connection work where excessive vibration or tube movement is not involved. Used for both maintenance and production applications.





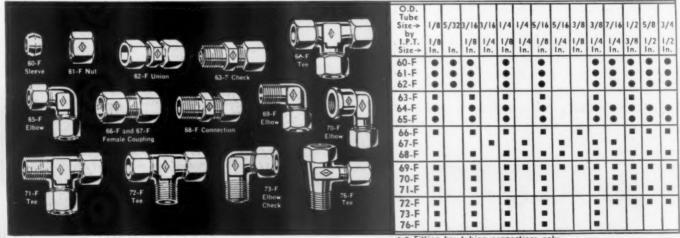
#### ADVANTAGES

One of the most universally used types of fittings because of its simplicity, efficiency, low cost and ease of assembly. (No flaring, soldering or other preparation of tubing necessary to assemble.) This type of fitting was originated by Imperial in 1907 and has been one of the basic fittings for tubing connection work ever since.

#### STOCK SIZES

Compression Fittings are ordinarily made for 1/8" to 3/4" O.D. tubing. Stock sizes of Imperial Compression Fittings are indicated in the table below by dots and squares.\*

THE IMPERIAL BRASS MANUFACTURING CO., 512 So. Racine Avenue, Chicago 7, Illinois



\*• Fitting has tubing connections only.

Fitting has both tubing and pipe thread connections.

TAPERIA \* Headquarters for tube fittings and tube working tools





## What does "Smooth Power" mean?

Referring to small motors, "Smooth Power" means instant starting, quick pickup and smooth-as-silk operation. Dependable power, when and as you want it.

"Smooth Power" motors are versatile, too. They run such widely differing devices as record changers, tape recorders and intricate control mechanisms. If one of our standard models won't meet your needs, we're adept at designing specials.

Priorities are needed for current delivery, but our engineers have time available for planning your future needs. They'd like to work with you.

THE GENERAL INDUSTRIES COMPANY



(Continued from page 318)
Why is the gas turbine "news" today?

Progress in aerodynamic design and metallurgy, resulting in better efficiencies and higher throttle temperatures, has definitely brought the physical size of the gas turbine into the range of practicability. When designed for modern conditions of temperature and efficiency the gas turbine power plant is extremely compact, light in weight, and approaches in efficiency some of the other modern prime movers.

#### RE-USE OF CONTAINERS

HEREVER possible, boxes used by the Armed Services are designed with their reuse in mind. When a new motor, propeller or similar part is unpacked at the front, frequently the worn-out part can be placed in the same box and shipped home for rebuilding. Other recovery activities go on continuously. The Quartermaster Corps, for instance, salvages 60 percent of the metal strapping, which formerly was wasted.

On the home front, the War Production Board and War Food Administration are making an effort throughout the Nation to effect recovery and re-use of all types of containers, such as steel drums, gas cylinders, wooden boxes, barrels, corrugated and fiberboard boxes and textile bags, and milk and beverage bottles. Restrictive orders on purchase of new containers, designed to make sure that essential military and civilian users can satisfy their needs for containers, have forced many companies to retrieve used containers regularly as an alternative to curtailing operations.

For example, one branch of a mail order house used to buy 12,000 new boxes a week. Now, though it continues to use 12,000 a week, it buys only one thousand.

(Continued on page 322)



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(Continued from page 320)

The rest are used containers, which it salvages and reconditions. A manufacturer of chewing gum reported early this year that since September 1943, when its reuse program began, over 100,000 boxes have been returned—all but 4 percent usable. This company pays all shipping charges and 5 cents for each usable carton, and furnishes its customers with instructions for opening, flattening and shipping.

Changes in method and design have been made in some cases to help conservation measures like these. Many companies now are spot-sealing their fiberboard containers—applying glue in spots only—to facilitate opening without damage. A wooden paddle has been designed and manufactured to open packages with less

danger of tearing.

Adoption of similar salvage and re-use programs by additional companies may furnish for many the only answer to shortages this year, according to WPB and WFA

#### X-RAYS NOW HAVE WIDE APPLICATION

**P**ROM their original medical use, the field of application of X-Rays has been extended in many other directions, according to Dr. William D. Collidge, General Electric vice president, who cited among others, the following:

"They may serve as a means of chemical analysis.

"They are used to measure the distances between the atoms in a crystal and determine crystalline structure.

(Continued on page 324)



Safety Equipment must not only be protective — it must be productive! Pulmosan Safety Equipment is designed and constructed to practical job requirements, to eliminate unnecessary weight and bulk and provide greatest working freedom and comfort for workers.

This careful designing is found thruout the line of Pulmosan safety equipment for every hazard — every occupation — every industry. Tell us your needs. Write for complete catalog.

#### RESPIRATORS

hemical Helmets

ce and Protective Clothing

First Aid Skin Creams

Foot and
Toe Guards
Goggles

Welding
Equipment
etc., etc.

Pulmosan

PULMOSAN SAFETY EQUIPMENT CORP., 176 Johnson St., Brooklyn 1, N. Y.

PULM SAN STOPS Accidente



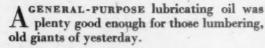
In 1903 a one-job oil was good enough

A granddaddy of the modern steam turbine. This 5,000 KW turbine-generator set of 1903 vintage operated at low steam temperatures and pressures . . . required no specially refined oil.

Today's speedy, high-temperature tur-bines need an oil especially refined for turbine operation . . . an oil that prevents rust, and at the same time has superior oxidation stability.

## **BUT TODAY'S TURBINES NEED THIS** 2-JOB TURBINE OIL!

- 1—That Prevents Rust
- 2—That has Superior **Oxidation Stability**



But to withstand the severe conditions encountered in modern turbine operation, an oil must do 2 jobs at once: (1) prevent rust, (2) resist oxidation. It is this ability to do both jobs at once, to an unusual degree, that has built up for Shell Turbo Oil an enviable reputation for outstanding performance in every type of steam turbine operation.

For over a year, Shell Turbine Oil has been used aboard battleships, destroyers, aircraft

carriers and other units of our fleets, under operating conditions far more severe than any met on land. In fact, Shell Turbine Oil was the first of its type to be approved as meeting rigid U. S. Navy specifications.

With performance records like this no turbine operator can afford to ignore the possibility of using Shell Turbo Oil in his turbines. Call in the Shell man now.

Or, if there is not a Shell office near you, write: Shell Oil Company, Inc., 50 West 50th Street, New York 20, N. Y., or 100 Bush Street, San Francisco 6, California.



SHELL TURBO O





FORGED STEEL FITTINGS — Forged Steel Screw End and Socket Welding Pipe Fittings are made by Watson-Stillman in a full line of Elbows, Tees, Crosses, Laterals, Couplings, Reducers, Bushings, Caps, Plugs and Unions for standard, extraheavy and double extraheavy pipe lines. All W-S Fittings have uniform wall thickness, maximum wall strength and conform to rigid material specifications. Ask for Bulletin A-3.



VALVES—For use on standard, extra-heavy and double extra-heavy pipe lines, Watson-Stillman—supplies bronze or forged steel Globe Valves, Angle Valves, Needle Valves and Check Valves in a wide range of sizes, for screwed, socket welding and flanged connections. Ask for Bulletin A-4.



HYDRAULIC JACKS — Watson-Stillman builds standard hydraulic jacks in Independent Pump, Vertical Attached Pump, and Horizontal Attached Pump types. Capacities of 10 to 500 tons. Ask for Bulletin 710-A.



HAND PUMPS—For operating jacks, small hydraulic tools, and general hydrostatic testing purposes, Watson-Stillman manufactures Single Plunger and Double Plunger Hand Pumps with large, medium and small tanks. Ask for Bulletin 240-A.



WIRE ROPE SHEARS — On all sorts of construction and maintenance jobs, Watson-Stillman Wire Rope Shears are time-saving equipment, Also suitable for cutting iron bars and rods. Ask for Bulletin A-6 Edition 3.

The Watson-Stillman Company, Roselle, N. J.

### **WATSON-STILLMAN**

Distributor Products Division

DESIGNERS AND MANUFACTURERS OF FORGED STEEL
FITTINGS, VALVES AND HYDRAULIC EQUIPMENT

(Continued from page 322)

"They reveal hidden flaws in structural materials.

"Through the measurement of the spacing of atoms they make it possible to show existing strains in structural materials—strains, which, if not removed, might lead to a structural failure.

"The very low voltage X-rays are used in microradiography as a means of studying the composition of very thin metallic specimens and to reveal structure in delicate botanical and zoological tissue.

"Lastly, and to the physicist most important, the X-rays have, perhaps more than any other single agent, advanced our fundamental knowledge of the structure of matter."

#### DUSTLESS TREATMENT OF COAL WITH AVAILABLE OILS

O ILS now available for dustless treatment of coal differ so widely from those marketed in the prewar period that many questions have arisen as to their properties, limitations, and proper methods of application. Bituminous Coal Research has attempted to provide the answers to these questions in Information Bulletin No. 6 entitled "Questions and Answers on the Use of Fuel Oils for the Dustless Treatment of Coal," which has been distributed to the industry.

#### Methods of Application

Three methods of distributing the oil on the coal are effective. With many spray systems, the oil is heated to get proper atomization in the spray nozzle. As alternatives, it has been found possible to apply oil by flowing it in small streams through 1/16 inch,

(Continued on page 326)



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# COME TO THE PLANT THAT SPECIALIZES ON THEM... and nothing else

The Harper organization devotes its energies and facilities exclusively to non-ferrous and stainless fastenings. It manufactures bolts, nuts, screws, washers, rivets and specials of Brass, Bronze, Copper, Everdur, Monel Metal and Stainless Steel. It produces nothing in common steel or iron.

Harper offers large and widely assorted stocks... extensive manufacturing facilities... engineering "know-how"... and field service difficult to match elsewhere. All of which means much to the fastening user.

New four color, one hundred four page catalog and reference book ready soon.

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Representatives in Principal Cities



MONEL . STAINLESS

(Continued from page 324)

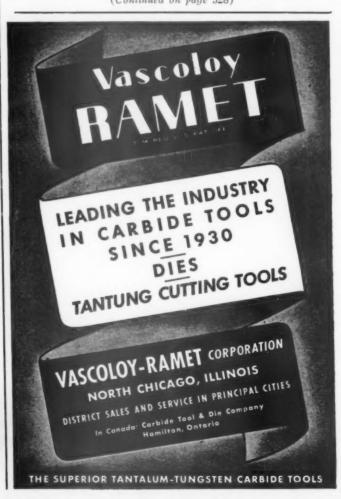
or smaller, holes drilled along the length of a pipe which is placed above the stream of coal falling from the boom. Oil is pumped into the pipe at such a pressure as to give the required rate of application. Quite viscous oils can be applied by this method at relatively low pressures and without heating. The oil is distributed after application by installing plates to tumble the moving coal.

Applications of oil to coals have also been successfully made in the laboratory in the form of a mixture of oil and sawdust similar to sweeping compounds. Oil may be mixed in proportions of about 50-50 by weight with dry soft-wood sawdust. Oils having viscosities of 200 to 600 seconds have been used in the laboratory. Tests show that such treatments are slightly more effective and permanent than equivalent amounts of oil alone. This method is new, but gives promise of being simple aird inexpensive where a supply of sawdust is available.

Information Bulletin No. 6 gives a suggested list of specifications for the purchase of coal-spray oil under present conditions. Copies may be obtained by addressing the Washington Office or the research laboratory at Battelle Memorial Institute, Columbus 1, Ohio.

### RECLAIM SYNTHETIC RUBBER

MPLOYING the same machinery that for years has been used for natural rubber reclaim, the Naugatuck Chemical Division of the United States Rubber Company has perfected a means for reclaiming synthetic rubber. Thus far more than 1,000,000 pounds (Continued on page 328)



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### An "Extra" with Every Besly Tap!

For 50 years Besly engineers have been constantly refining their designs, working toward the modern line of Besly Taps. Today, with the regular Besly line at a peak, Besly engineers are designing special taps to meet wartime demands for new tolerances, new metals. These "specials" supply a breadth of experience that many times provides refinements in design and manufacture of Besly's "regulars".

When you specify Besly you get taps that are precision made of the finest materials, that cut longer, truer and cooler, that are designed for rapid chip clearance—plus the "extra" of Besly engineering experience and Besly service.

If you have a tap problem, don't hesitate to call on your nearby Besly engineering representative. He is prepared to work with you on the solution, without obligation.

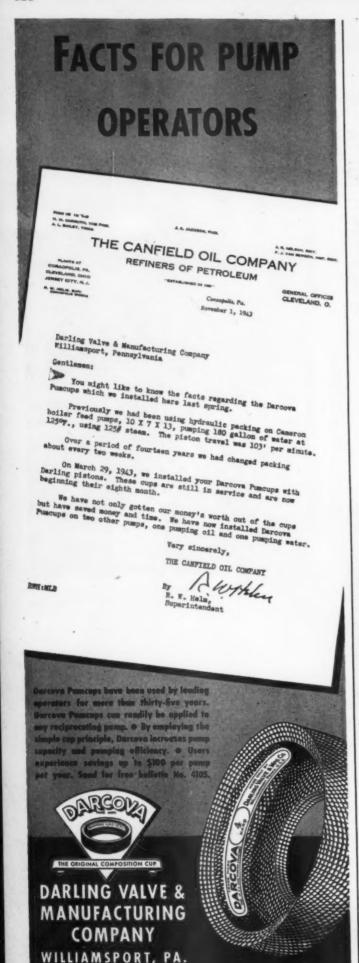


Write for Catalog No. 67—a compendium of useful knowledge for tap



BESLY TAPS • BESLY TITAN ABRASIVE WHEELS BESLY GRINDERS AND ACCESSORIES

CHARLES H. BESLY AND COMPANY . 118-124 N. Clinton St., Chicago 6, III. . Factory: Beloit, Wis.



(Continued from page 326)

have been reclaimed, and the rubber is again being used in the manufacture of the same identical items for which it was previously used. According to the scientists who have developed the new formulas, synthetic rubber is relatively high in desirable properties after reclaiming. The volume of reclaim which will find its way back into manufacturing channels this year will depend upon the scrap situation. More than 5,000,000 pounds are now available, and more will steadily accumulate. After the material has been reprocessed, these millions of pounds will be returned to the national stockpiles.

### THE V-BOX IS TOUGH

DEVELOPMENT of improved fiberboard boxes for military shipment has been a powerful factor against repetition of early troubles such as those experienced in the first shipments to Iceland. Quick action to garrison this outpost did not permit time for special protection to canned food, which was available only in the ordinary domestic corrugated fiberboard boxes. Boxes in one shipload burst and the loose cans could not be taken off the ship at its destination. The cargo had to be returned to the United States and unloaded here, can by can.

To prevent such incidents as this, and provide a fiber container proof against the hazards of military export under unpredictable conditions, Government and industry collaborated in research. Boxes by the score were fabricated of different materials and subjected to rigorous tests. In the course of experiments the boxes were submerged in water, and again anchored on the

(Continued on page 330)



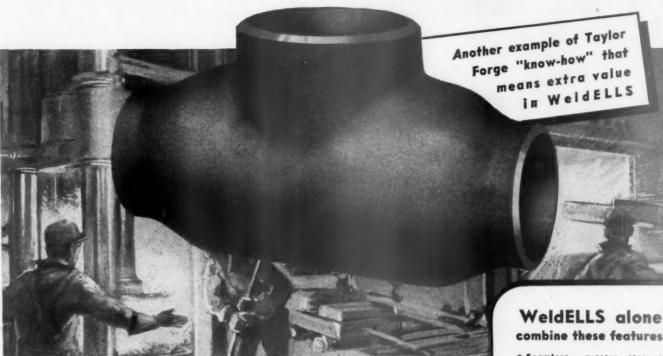
Licking his weight in wildcats is a trivial job for the wolverine. Incredibly tough, he fears no living thing.

Incredibly tough, too, and equal to every demand of rough and hurried wartime shipping is TANGLEFOOT Gummed Tape. "Tops in tape," today as always, it provides the extra protection your products so vitally need. Buy tape by name. Buy TANGLEFOOT. It pays. Write for dealer's name.

### TANGLEFOOT Gummed Tape

The Tanglefoot Company, 401 Straight St., S. W., Grand Rapids, Michigan

### RARE SPECIMEN IN WELDING TEES-



• When you think of a reducing tee you always picture it as reducing in the branch. But this one, for the peculiar purpose it serves, had to be made the other way around. It's a seamless, carbon-moly forging, five inches in the run with a seven-inch branch—an "increasing" tee, so to speak; one more example of those kinks that are found so abundantly in the Taylor Forge bag of tricks.

The "know-how" acquired during many years of performing these pecial-often extremely difficult-manufacturing operations, has a highty important bearing on our standard line of WeldELLS, Welding Tees and other Taylor Forge Welding Fittings.

It means that in developing WeldELLS we did not have to ask what kind of fitting is easiest to manufacture. Instead we asked what comprises the ideal fitting, and then, with every special facility and process at our command, made that conception a reality.

That is why WeldELLS have tangents . . . why they have extra reinforcement where service stresses are greatest . . . why they have such extremely accurate dimensions . . . why they have the features listed opposite . . . why, in short,

### WeldELLS have everything

TAYLOR FORGE & PIPE WORKS, General Offices & Works: Chicago, P.O. Box 485 New York Office: 50 Church Street Philadelphia Office: Broad Street Station Bldg.

### combine these features:

- · Seamless greater strength and uniformity.
- Tangents -- keep weld away from zone of highest stress-simplify lining up.
- Precision quarter-marked ends -simplify layout and help insure accuracy.
- Selective reinforcement provides uniform strength.
- · Permanent and complete identification marking-saves time and eliminates errors in shop and field.
- Wall thickness never less than specification minimum -assures full strength and long life.
- Machine tool beveled ends—provides best welding surface and accurate bevel and land.
- The most complete line of Welding Fittings and Forged Steel Flanges in the World — insures complete service and undivided responsibility.



ALL SPRINGS ARE NOT EQUAL

-SOME ARE NOBLY BORN AND
LAST LONGER!



(Continued from page 328)

shore by ropes to drift in and out with the surf.

The result was the V-Box, of laminated fiber impregnated with synthetic resin. In some VBoxes the fiber board contains a layer of asphalt, in others a layer of sisal fibers. V-Boxes are 15 times as strong when wet as previous waterproof boxes. Unlike other boxes of various types and materials, heavily packed V-Boxes can be dropped on their corners without splitting.

In fact, according to the Army Quartermaster Corps, an adaption of the V-Box can be dropped from airplanes safely without parachutes. In one test enough K Ration was thrown out to feed two battalions for a day. The official observer reported that "I saw none that couldn't be carried and consumed."

In general shipment the V-Box has stood up to the satisfaction of all concerned. In one war theater, out of 133,563 V-Boxes inspected during the last week in February, only 410 were damaged. In another recent week the score was only 50 damaged out of 181,899. These boxes had arrived from the United States with products ranging from food to chemicals.

### TERMINATED CONTRACT SURPLUSES

WPB Regional Offices To Seek Buyers In Leftover Property

W. L. CLAYTON, Surplus War Property Administrator, announces that the War Production Board will cooperate with the procuring agencies of the armed services in disposing of property left

(Continued on page 332)



### "WATCH THE LUGS!

for the <u>Simple</u> Secret of SAFER, POSITIVE-LOCK Thors HOSE COUPLINGS

-not the coupling.

To begin the connection,

3 A slight push with both hands recedes the sliding sleeves against inner springs (phantom view) and moves the beveled iaws (gray) into position with their respective slots.

Prestol-with a slight twist the beveled jaws snap into posi-tion, the springs recoil, and the lugs (black) slide up and into positive-lock position.

THIS ENTIRE CON-NECTING OPERATION OC-CURS IN A FLASH-ALMOST QUICKER THAN THE EYE CAN SEE IT.

Now, to disengage the Thor coupling, all the operator does is pull back the spring-enclosing sleeyes to release the lugs from locking position. 

полотоп

Now unlocked, with the lugs free of the connection, the beveled jaws automatically release and the coupling co

CONTRACTOR SERVICE

SIMPLE? YES! But in this simplicity of springoperated locking lugs controlling the beveled jaws lies the positive-lock feature that makes the Thor Hose Coupling the safer . . . perfect connection. Easy to operate, this Thor coupling will save you both time and money.

Positively locked, it cannot be accidentally disconnected to endanger the operator of the tool. Even if one hose end strikes a snag and the sleeve slides back, the sleeve on the opposite side stays in position to retain the connection . . . because the sleeves must be pulled in opposite directions simultaneously to disengage the locking lugs!

... interchangeable between all sizes and combi-nations up to 3/4 inches, inclusive. Each hose end is identical with the other—no right or left ... no male or female—making a universal coupling. Write today for complete information in Thor Catalog 42-A.

HOSE COUPLINGS

Portable Pneumatic and Electric Tools

PNEUMATIC TOOL COMPANY



600 W. JACKSON BOULEVARD, CHICAGO 6, ILL. **Branches in Principal Cities** 

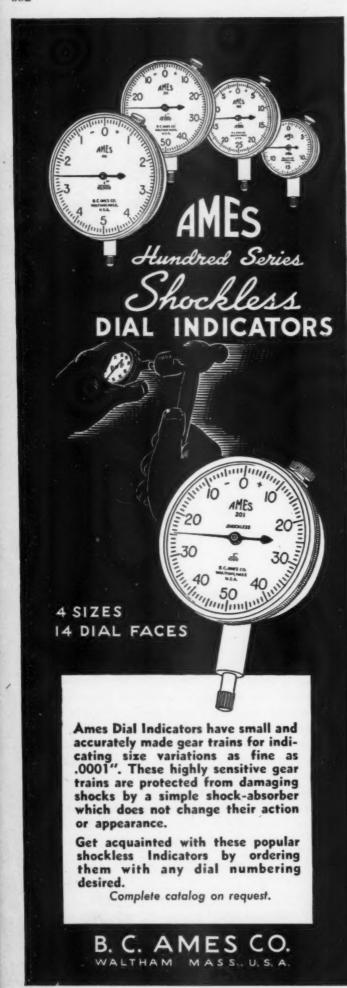
(Continued from page 330)

over from terminated contracts. The board's 13 regional offices will endeavor to find buyers who are permitted under WPB regulations to purchase such surplus materials. Each regional office will have on file a list of property available in its territory and offerings will be made therefrom in conformity with the price policy recently established by the Surplus War Property Administration.

The materials to be listed with the War Production Board will consist of raw materials, semi-finished goods and scrap and will include steel, copper, aluminum, chemicals, textiles and lumber, as well as purchased parts and supplies. Contracting officers for the procuring agencies are already taking action to dispose of this material to the contractor whose contract has been terminated and to other contractors who are engaged in war production, SWPA said.

The War Production Board, through its regional offices and contacts with industry, is in position to put buyers who are in need of materials in touch with contractors and agencies who hold the surplus materials, thus accomplishing the dual purpose of providing needed materials for essential production and aiding in surplus disposal, SWPA said. These WPB regional offices, assisted by their district offices, are currently arranging for the movement of approximately 30,000 tons of surplus steel and large quantities of other materials weekly.

Mr. Clayton emphasized the necessity for clearing this left-over material out of plants so that other war production or essential civilian production may be resumed without interruption.





### Tanks Especially Designed for **Heating Wax and Rust Preventives**

ELECTRICALLY HEATED . . . THERMOSTAT CONTROL



Correctly and safely heat wax and Rust Preventives - No discoloration or scorching of materials.

Tanks are sturdily built - insulated on four sides and bottom Equipped drain. Also used for alkali metal cleaning, rinsing, etc.

USED BY AMERICA'S LEADING FIRMS AND GOVERNMENT DEPOTS Standard sizes: 5, 12½, 30 and 60 gallon. Larger sizes on request.

**FAST DELIVERY** 

WIRE OR WRITE US FOR INFORMATION ON TANKS FOR HEATING ETHYLCELLULOSE.

COOPER CO.

20 EAST 18th STREET

CHICAGO 16, ILLINOIS (PHONE: VICTORY 7676-6675)

In War or in Peace MILWAUKEE WROUGHT WASHERS encircle the Globe!



WROUGHT WASHER MFG. CO. MILWAUKEE 7, WISCONSIN

SETTING THE LENGTH TO CONTROL THE LOAD ...

Cintomatically

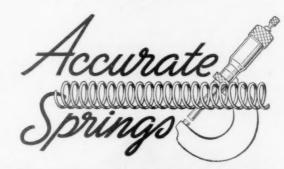


Greater precision and closer control without sacrificing production remains a constant challenge to Accurate Engineers. It is the reason why many unusual machines like the one above have been developed and built by Accurate to help make better springs faster.

This automatic spring setting machine checks and sets compression springs to an exact length to closely control spring load. It saves time, labor, and reduces cost.

The quality and service you can expect from Accurate is the result of a combination of many things: special experience, "know how," ingenuity and interest in making better springs, quicker at lower cost. What are your spring and wire form problems?

> Send for the New Accurate Handbook. It is full of informative data and formulae that you will want for your files. Free of course.



ACCURATE SPRING MANUFACTURING CO. Chicago 24, Illinois

SPRINGS . WIREFORMS • STAMPINGS



A DREAM COME TRUE—a completely coordinated and integrated air-rail express service!

Ever since the fast, safe, personalized handling of shipments we know as Express Service was developed in 1839, it has been distinguished by adapting new techniques.

From the moment the airplane was proved capable of sustained flight, alert Railway Express began to plan how this new transportation vehicle could be made to serve the needs of industry and the public.

Step by step the way was proved. 1919 saw the first chartered flight for Air Express on a definite route, New York to Chicago. 1927 was a real milestone year. It saw the establishment of the nation's first Air Express network serving 26 airport cities coast-to-coast, and the formation of Air Express Division of the Express company, the essential step toward providing a responsible, co-ordinated air-rail express service. 1944—Air Express directly serves 350 airport cities at 3-mile-a-minute speed, and 23,000 Railway Express offices the nation over through integrated Air-Rail service. International Air Express to over 60 foreign countries.

From 5,160 shipments in four months of 1927 to over 1,500,000 in 1943—that's the record of Air Express. Serving the war effort today spectacularly and successfully, Air Express coordinated with Railway Express will serve you well tomorrow.



### SALVAGE BY INDUSTRIAL WORKERS

THE beginning of a far-reaching program to carry the fight against waste of salvageable home materials directly to workers in the war plants of the nation has been announced by Herbert M. Faust, director of the Salvage Division of the War Production Board.

Stressing the large number of women who have left their kitchens for the war production line, and the necessity of reaching these householders at their work benches, Mr. Faust explained that the program is designed to educate the workers on how to save paper, tin, fats and rags in the home, and cooperate with the salvage committees of their respective communities.

Home salvage committees will be formed in each plant. They will obtain signed pledges from all workers that in his or her home—

Every used tin can will be properly prepared and disposed of.

All used fats will be saved and turned in to the butcher.

All wastepaper will be saved, segregated, and set out for collection.

All rags will be salvaged in accordance with local salvage committee collection procedures.

The committee will check regularly on employee participation, both personally and by monthly report cards, and will conduct an educational program in the plant by means of posters, bulletins and other means.

Where existing collection facilities are not well organized, special collections may be arranged for deposit

(Continued on page 336)



### In One Handle Movement

Anywhere on any job — without power — just the workman's hands. The power is in the tool — approximately 80 times the manual pressure used.

A quick-acting, clean-cutting, portable tool which stands up under long, hard service. Largest size cuts up to  $\frac{3}{4}$  inch annealed bolts in thread and  $\frac{5}{4}$  inch soft rods. Saves time and labor. Other models for cable, flat bars, rods, chain, etc., — a size and type for all metal cutting. Special heads for special operations, bending, crimping, etc.

Ask for catalog and free tool maintenance book, a practical manual on the care of hand tools.

PORTER HKP CUTTERS



# <u>Ammediate</u> Delivery

All sizes from one inch to six inches available for immediate delivery from stock.

Central Certified Accuracy Micrometers May Be Purchased singly or in de luxe sets. Write for illustrated catalog.

MICROMETERS OF CERTIFIED ACCURACY AUBURN . . . RHODE ISLAND



### TISSUE TIPS by VICTORIA





### Specify VICTORIA TOILET TISSUES

per Mills Co., Fulton, N.Y. Craftsmen in paper-making since 1880.

### The A-B-C of **Pipe and Bolt Machines**



#### Model-A

A high-speed heavy-duty de-luxe Pipe and Bolt Machine, Range ½ to 2-inch—up to 12-inch with geared tools and drive shaft. Bolts, ½ to 2-inch. Wt. 415 lbs. Ask for Bulletin-A.

### Model-B

A compact utility Pipe and Bolt Machine combining many features of Model-A with the easy portability of Model-C. Range 1/2 to 2-inch—up to 8-inch with drive shafts and geared tools. Bolts up to 1/2-inch. Weight 280 lbs. Ask for Bulletin-B.



#### Model-C

A strudy little Power Unit.

Converts Hand Pipe Tools into Power Tools from ½ to 8-inches. Threads 8-inch in 6 minutes. Threads bolts up to 1½-inch. Equipped with automatic chuck wrench ejector—a safety feature. Two men can use it at the same time without interference. Easily portable—weight about 150 lbs. Write for Bulletin-C,

Also a complete line of hand tools.

### BEAVER PIPE TOOLS

744 GROW AVE., WARREN, O.



**WE CAN'T CANVASS** 



YOU FOR **CANVAS** YET...

> BUT WE CAN PREPARE FOR YOUR

Requirements Now!

Right now we are on war work for Uncle Sam. But soon we expect to be allotted a supply of canvas for civilian requirements. Not a great deal-just enough for certain items most urgently needed by industries

So, if you will write us while you think of it, merely stating what you need most in canvas, that's what we will plan to produce first. We'll talk about orders

FOSTER MANUFACTURING CO.

430 NOTRE DAME ST., NEW ORLEANS-6-LA

(Continued from page 334)

within factories and plants with management cooperation.

"Each and every industrial worker has a direct stake in this campaign," Mr. Faust emphasized, "for in addition to their use by the armed forces, the materials salvaged are absolutely essential to keep the war plants of the nation operating at top speed.

"Through this expanded salvage program, contacting millions of workers in a personalized way right at their benches, we expect to generate from a largely untapped source an entirely new flow of salvageable materials to meet the steadily increasing demands of the war and

home fronts.

Endorsed by Donald M. Nelson, WPB chairman and backed by the National Association of Manufacturers, labor-management groups, the American Federation of Labor, the Congress of Industrial Organizations, the Railway Labor Executives' Association, and the United States Chamber of Commerce, the program was originally begun on a test basis last fall in different sections of the country, and has since spread rapidly through the New England area.

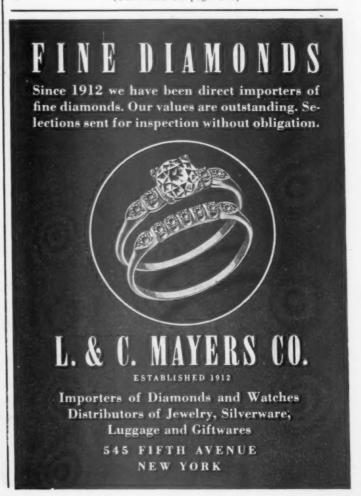
### 1 1 1 NEW FURNITURE FINISH

A better finish for home, school and office furniture, much tougher than present varnishes or lacquers, is promised after the war by the Finishes Division of E. I. du Pont de Nemours & Company.

A formulation described as "unique" has been devel-

oped at the company's laboratories for use as a base or prime coat. Its value lies in the extraordinary adhesion

(Continued on page 338)





The thinking here at "Newton" has never been in terms of isolated "jobs," but rather of the needs of industry as a whole. This has doubtless been reflected in Newton service, for over the years industry has placed with us many of its most difficult assignments . . . with the result that Newton Screw Machine Products have become standard in a very important percent of the appliances, instruments and similar devices produced in this country.

NEWTON SCREW MACHINE PRODUCTS
THE NEWTON MANUFACTURING CO., PLAINVILLE, CONN.



ICTORY on the production front is being aided mightily by the economical and faithful service of thousands of Valley motors and grinders in war plants everywhere.

Prompt delivery of Valley Equipment can be obtained by those authorized to purchase.

Valley Ball-Bearing Motors from ½ h.p. to 75 h.p. . . . Grinders from ¼ h.p. bench type to 5 h.p. pedestal models.



VALLEY ELECTRIC CORP.

4221 Forest Park Blvd.

St. Louis, Missouri



### ARMSTRONG

Drop Forged "C" Clamps

ARMSTRONG Drop Forged "C" Clamps come in six types, each in all sizes. The ARMSTRONG Heavy Duty "C" Clamps with long hubs, extra large alloy steel screws and drop forged, heat treated bodies which because of their extra strength and stiffness, rigidity and fine machining are generally recognized as the finest clamps obtainable. Other types include Medium Service, Light Service, Extra Deep Throat and Tool Makers Clamps — all with drop forged, heat treated body and special steel screws, all quality clamps.

Write for Catalog C-39a.

### ARMSTRONG BROS. TOOL CO.

303 N. Francisco Ave., Chicago 12, U. S. A.

Eastern Sales Office: 199 Lafayette St., New York, N. Y. (Continued from page 336)

it provides for the top coat. The new so-called "penetrating primer," by affording improved "anchorage," permits the use of higher scratch-resistant finishing lacquers. Such super-tough pyroxylin lacquers have long been available, but were impractical because a sufficiently strong adhesive bond with a wood surface could not be obtained.

"The big research problem in utilizing tougher furniture lacquers to resist wear, tear and scratching," explained R. C. Peter, Du Pont Industrial Finishes Division development manager, "is a struggle between cohesion and adhesion. Visualize, for example, a table top to which has been glued sheets of paper and of metal. While it is impossible to strip off the paper, the metal can be removed with little difficulty, despite the fact that the strength of the glue is identical in both instances. The variable here is the difference in the cohesion of the two materials, that is, their ability to hold together.

"When the cohesion of a lacquer film over a surface so exceeds the adhesion, it can be too easily chipped from the underlying surface, as in the case of the metal sheets," said Mr. Peter. "The new first-coat material has a special elastomer, or rubber-like ingredient, that securely binds the top coat to the wood."

### MILKWEED TO REPLACE KAPOK

THE requirements of the armed forces for buoyant, waterproof material to replace kapok in the manufacture of life jackets may result in roadsides and highway right-of-ways being unmowed in areas where milk
(Continued on page 339)



Eagle Oilers are being used in all parts of the world by our armed forces. That takes a lot of oilers.

We know that you want Eagle oilers, too. Sufficient material is not available to make enough of every kind of Eagle oiler, but we are doing our best to keep you supplied with our popular Welded Steel Bench Oiler.

Order from your distributor.

### EAGLE MANUFACTURING CO.

Wellsburg, West Virginia

(Continued from page 338)

weed is prevalent until after the milkweed pods are harvested in the fall for their floss. The cooperation of the State and county highway departments has been requested by the Public Roads Administration.

At the request of the War Production Board, the War Food Administration is organizing a campaign to collect at least 1,500,000 pounds of milkweed floss to meet military requirements this year. With supplies of kapok cut off by the war, milkweed floss has been found to be the best material available for use in life jackets.

### NEW SYNTHETIC RUBBER

NEW type of synthetic rubber, unique because it promises to be especially suitable for use in making heavy-duty tires for trucks, buses and even military vehicles, has been developed by the Research Department of The Mathieson Alkali Works, New York, N. Y., according to G. W. Dolan, president.

Tires subjected to heavy loads and high speeds become excessively heated in service and wear rapidly if made from rubber that weakens at high temperatures. Preliminary reports of comparative road tests under the sponsorship of the Office of Rubber Director indicate that the Mathieson rubber stands up well under severe service conditions, according to Mr. Dolan.

Reports of independent laboratory tests also show that it has greater resistance to heat, moisture, oil and kerosene than GR-S, and less permeability to gases. In certain of these respects, the laboratory tests indicate superiority to natural rubber as well. It is said to have good milling properties.

"The Mathieson rubber is made of butadiene and a new chemical produced from readily available raw ma-(Continued on page 340)



Looks okay, doesn't it?

It's not, however, for a sharp-eyed inspector found that it lacked one of those hidden qualities so characteristic of all K cast iron fittings.

Is it the threads or chamfer? No, they are clean and sharp.

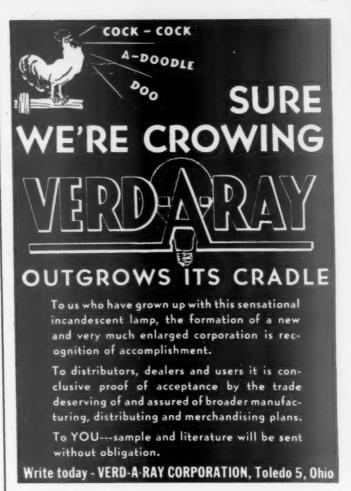
Does it have any sand holes or other surface imperfections? No,
for in this respect it is a typical K.

Here's what is wrong . . . this fitting has a thin spot in the walls, which condemns it.

Specify K's . . . they are the kind of fittings you want on your finest jobs.

"K" stocks at Malleable Iron Fittings Co., Branford, Conn. a M.I.F. stocks at Kuhns Bros. Co., Dayton, Ohio

KUHNS BROS. COMPANY, DAYTON, OHIO







### "KNOW HOW"

New Materials, New Products, New Machines and Tools born during the War period are covered by new Bulletins and Catalogs listed in the "Know How" Pages of PURCHASING Magazine — Nos. 10, 12, 14, 16.

Bold Face headings and terse descriptions make them easy to check and to read.

Try it! Maybe you will want the book of plastics, the 64-page book of Purchasing Department forms or the book that "tells how to talk about taps". There are many others you may find worth while.

Check the coupons on these pages for the material you want — have your assistants check them — Bring your files up-to-date. The material will be sent to you without cost.

(Continued from page 339)

terials," said Mr. Dolan. "Its cost is expected to be about the same as that for GR-S on the same scale of manufacture. It is still in the development stage, and, of course, plans for its production cannot be revealed."

### POWDERED METAL PARTS UP TO 100 POUNDS

Powdered Metal Tool Parts Attain Accuracy
Up to a Ten-Thousandths of an Inch

**P**RODUCTION of a wide range of vital parts made from powdered metal for war products by Amplex Division of Chrysler Corporation now exceeds 250.000 units daily, according to A. J. Langhammer, president of Amplex.

Parts made from powdered metal—sometimes produced 200 times faster than by standard manufacturing methods—are now used in practically every piece of war equipment built for the Army and the Navy. Mr. Langhammer revealed that American heavy bombers use in their construction more than 2000 parts made from powdered metal.

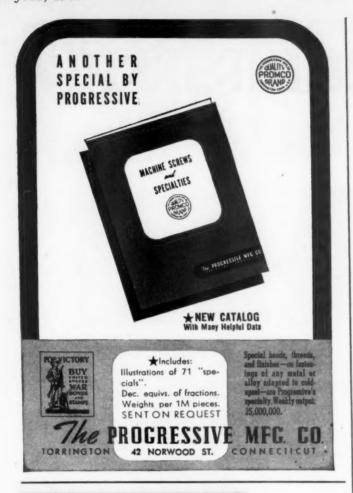
Advances in the technique since Pearl Harbor have been so rapid that where three-pound pieces pressed from metal powder were considered a maximum, Amplex now presses from metal powders big units weighing in excess of 100 pounds. On one war job, Mr. Langhammer disclosed, adaption of the powdered metal techniques in producing parts was instrumental in a saving in one year of more than 8,000,000 man hours and 1.250,000 pounds of strategic metal.

He pointed out that powdered metallurgy is a major factor in solving lubrication problems on war equipment. Much of the powdered metal manufacturing is in the form of bearings which are oil impregnated and provide their own lubrication, he reported. This is a vital contribution in the design of equipment which has to function efficiently in the world's greatest climatic extremes. He emphasized the fact that this was the nation's first global war requiring mechanical equipment designed for many fronts.

Production of a new Chrysler product from powdered metal—tool steel so hard that it will cut glass—was disclosed. Mr. Langhammer reported that iron powder so fluffy that a good breath will blow it away is now being pressed into precisioned tool makers instruments which attain accuracy to a ten thousandth of an inch. He cited this contribution as breaking one of the war's worst bottlenecks. Although the nation created vast machine tool capacity, its production of precision measuring devices lagged, due to a limited peacetime precision output as compared to production for war. Incidentally, these vital products are pressed from steel mi'l waste—not reclaimable metal.

Production by the powdered metal method almost completely obviates the necessity of machining; and Mr. Langhammer holds that developments now being studied will increase the scope of powdered metal manufacturing in its contributions to making American weapons vastly superior.





### **HOMAS TRUCK** of Keakuk





RUBBER WHEELS

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Removable Jak-Tung lifts and moves truck Jak-Tung platforms to store and carry loads One Jak-Tung serves many platforms Jak-Tung is simple, safe and easy to raise and

Speedy, flexible and efficient in operation

Sizes, types and capacities for most uses With or without "Job-Suited" Super-structures

Put your plant on wheels—save men, save time. Use the Jak-Tung way to avoid rehandling of loads. One Jak-Tung serves many trucks. The No. 125 steel frame Jak-Tung truck is available in 8 platform sizes, with semi-steel or rubber wheels. Capacities 1760 lbs. to 3500 lbs. Welded steel angle frame. Hardwood deck. Shown with No. 102R Jak-Tung. Molded-on rubber tired, Hyatt bearing wheels. Simple, safe, easy lift and easy swivel. One serves many trucks.

Write for new catalog No. 43.

THOMAS TRUCK & CASTER CO.

434 MISSISSIPPI RIVER, KEOKUK, IOWA



★ Jeschke can make your wire specialties—make them faster and better-and get them to you on time.

Don't have your production held up, when our fast automatic machines have available capacity to turn them out by the thousands. No matter what the description of your wire or small stamping shape, our engineersour production experts-can help you.

Our location is particularly favorable for the supply of raw material-for producing your WE'RE order-and for shipping it to you.

> Send sample, or blueprint, or drawing-let us figure with you.

AHEAD OF PRODUCTION SCHEDULE AGAIN!

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700 POSTON DRIVE CRAWFORDSVILLE, INDIANA



IF IT'S MADE OF WIRE WE CAN MAKE IT

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### It takes more than THEORY to make good tape

Sure, theory's important in developing industrial tape . . . but it's got to be backed up by proof when you use the tape.

And right there you have the difference between Bauer & Black Industrial Tape and "just tape."

We start on the theory that the right application of the right tape can help you speed production . . . cut operating costs . . . and do a lot for over-all plant efficiency.

After we know the problems . . . after survey and research . . . after the final showdown under severe tests in our laboratory . . . beyond theory . . . then we know it is the right tape for the job to be done.

### Let Us Help You with Your Problems

Over forty years of developing and producing

many kinds of adhesive tape from fine surgical tape to rugged industrial tape, has taught us many things that may help you.

Out of our laboratory have come major advancements such as the first successful sterilization of tape and . . . the development of tapes to withstand extreme climatic conditions anywhere in the world.

This same tape experience is ready to tackle your problems.

### **Conservation Service**

Our conservation service has saved others from 15% to 40% of their annual tape bills.

Write or call and set a time when our trained sales engineers, working with your own production staff, may survey your plant for specific data on the application of Bauer & Black Industrial Tapes.



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PRODUCTION SHORT CUTS
TO REDUCE COSTS

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### THIS

Surface-Treated Sheet Steel

Gives you

5 Big Advantages

From Armco Research comes another new specially surface-treated sheet metal—Armco Cold Rolled Paintgrip.

This special grade of steel can eliminate a number of costly operations from your fabricating practices. The reason: It is mill-treated—given an electrolytic "flash" of zinc and then Bonderized. This zinc-phosphate surface is an integral part of the sheet.

Weigh these five important advantages:

- EASY TO FABRICATE. ARMCO Cold Rolled PAINTGRIP will draw, form, weld and solder readily.
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- 3. SMOOTH FINISH. ARMCO Cold Rolled PAINTGRIP is ideal where  $\alpha$  uniformly smooth surface is essential.
- 4. NO RUSTING IN STORAGE. Under normal conditions sheets or coils will not rust during shipment or while in storage, either as sheets or in semi-finished parts.
- 5. CHOICE OF BASE METALS. Although cold rolled steel is standard for this grade, other base metals can be obtained on large orders.

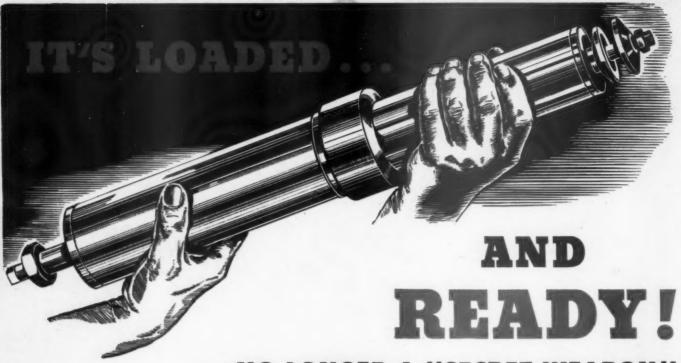
This specially surface-treated steel is well suited to such uses as kitchen cabinets, bathroom cabinets, refrigerator wrappers, furnace casings, metal furniture, filing cabinets, auto body parts, vending machines, and painted hospital equipment.

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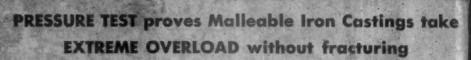


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	STRENGTH	YIELD POINT	ELONGATION IN 2 INCHES	ERATURE LIMIT		
ASTM 126-30 CAST IROM	34,000 585. PRR 30. 00.	0	0	10 450°F		
ASTM 47-33. AIR JURN MALL GRADE 35018	533,000 103,700 NA, 10	35,000 ABS. PEX. 90-101	18%	450°7		
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